Equipment Maintenance Guide

JULY, 1960
PRICE $1.00

Construction Methods AND EQUIPMENT
A McGRAW-HILL PUBLICATION

Special Report ..... Profitable

FIELD LUBRICATION

Practices ..... Page 86

MAINTENANCE AT NIAGARA ..... Page 113

COMPLETE CONTENTS, Page 4

"Our profit on the Pauls Valley School job depended on POZZOLITH"

GENE HUDGENS, Owner
E. P. Hudgens Construction Company
McAlester, Oklahoma

LOW COST in thin-shell concrete construction utilizing POZZOLITH is demonstrated on the Pauls Valley School project. Over-all cost on this 53,000 square foot job was just $10.00 per square foot. This includes partial air-conditioning, heating and insulation, plus sound-proofing and equipment for the science and home economics rooms and stage.

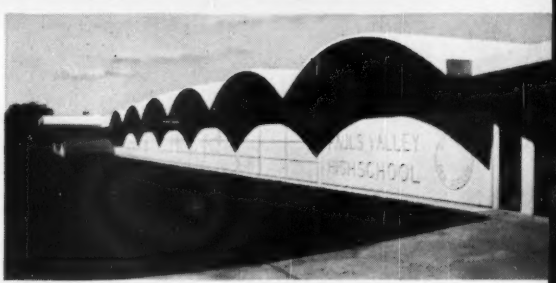
"The Pauls Valley School was a tough one to bid—because we had no criteria on which to base costs for this unique architectural concrete structure.

"At the start, our concrete test cylinders weren't giving us the 4,000 psi we needed, and we kept adding cement . . . up to 9 sacks a yard. We couldn't stand that expense so we called in Jim Sprouse—the local Master Builders field man—to look into POZZOLITH. That was the turning point on the job. POZZOLITH concrete gave us exceptional plasticity with the low slump we needed. Our test cylinders came right up to strength with only 5.8 sacks of cement.

"With our Oklahoma winds—concrete sets up almost while you look at it. POZZOLITH Retarder delayed the set up to 3 hours giving us greater flexibility in handling, placing and finishing . . . letting us do a better job with half the finishers. That was *another* important saving.

"Though I've known of POZZOLITH for a long time, I had to *work* with it to really see its value. Thanks to Jim Sprouse and his company's product we got a fair profit on this job."

For lowest cost-in-place—superior quality concrete—there's no equal to POZZOLITH. Call in the local Master Builders field man to demonstrate how POZZOLITH can help put you ahead on your current job.



PAULS VALLEY HIGH SCHOOL, Pauls Valley, Oklahoma. Architects and Engineers: Jack L. Scott and Associates, Oklahoma City, Oklahoma • Owners: Pauls Valley Board of Education • General Contractor: E. P. Hudgens Construction Company, McAlester, Oklahoma.

The Master Builders Company
Division of American-Marietta Co.
Cleveland, Ohio
World-wide manufacturing and service facilities

Our 50th Year

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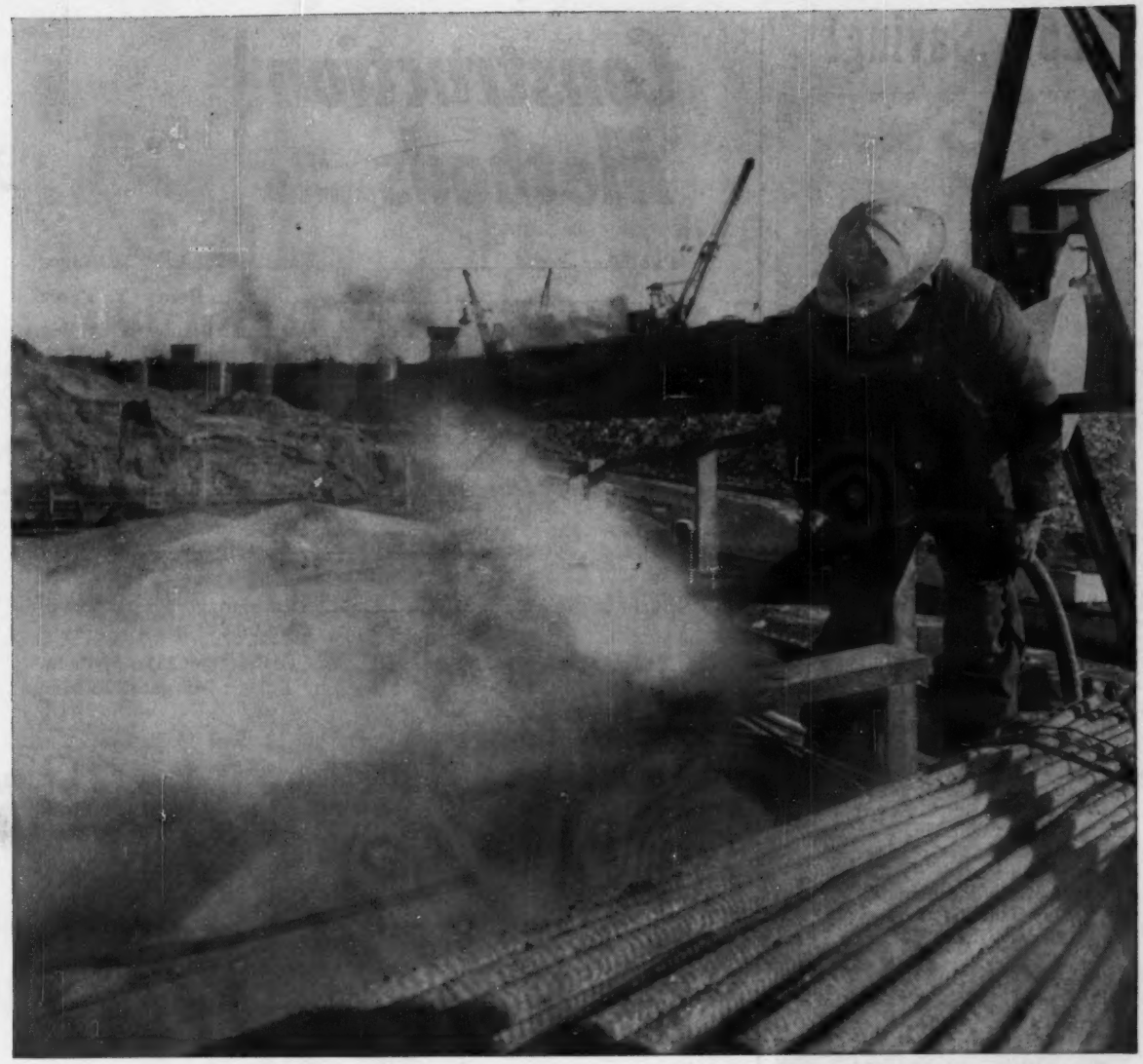
POZZOLITH®

**POZZOLITH is a registered trademark of The Master Builders Co. for its concrete admixture to reduce water and control rate of hardening and entrainment of air*



B.F.Goodrich takes the sting out of steam hose

Makes steam-handling safe with a hose that can't explode

THE job this man's doing used to be plenty dangerous. He's using scalding steam to cure concrete locks on a big construction project in southern Ohio. Heat used to weaken steam hose. Sometimes it burst with explosive force, spraying scalding steam, seriously injuring workmen.

To make a hose that would be safe, B.F.Goodrich engineers developed a new kind of heat-resistant rubber which they used inside the hose and between plies. Then they built layers of fine braided wire for reinforcement right into the hose.

The result is an improved hose—called Burstproof—that makes steam-handling safe. Even when this hose finally wears out after years of service, the steam will leak out, but the hose won't explode!

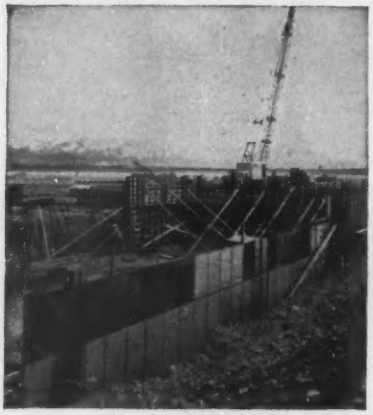
Engineers at the Captain Anthony Meldahl Locks and Dam project, Chilo, Ohio, report "no breakdown whatsoever" with the 3000 feet of Burstproof steam hose they're using. This despite fairly constant use, heat and pressure, and the abuse it takes as it's dragged over sharp concrete and rough, rocky ground.

Your B.F.Goodrich distributor has exact specifications for the B.F.Goodrich steam hose described here. And, as a factory-trained specialist in rubber products, he can answer your questions about the many products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Company, Dept. M-874, Akron 18, Ohio.*

B.F.Goodrich

STEAM HOSE

25% Saving!



Jet Age Concreting with Symons Steel-Ply Forms

. . . Cut Costs on Salt Lake Municipal Air Terminal

Christensen Bros., Salt Lake City, through a combination of sound engineering, imaginative forming with Symons Steel-Plys and efficient pouring methods have proved that even a jet age terminal building can be constructed rapidly and at moderate cost.

It was vitally important that costs be held to a minimum. Costs to the contractor on the basis of 150 re-uses of the forms amounted to about 15¢ per square foot. After four months' work, the cost of handling and stripping the

Designed for Salt Lake City Corporation by the architectural-engineering firm of Ashton, Evans and Brazier.

forms had dropped about 25 percent, compared to previous methods of handling heavier job-made forms. Also, costs were progressively reduced with each use of Symons Steel-Ply Forms.

Try Symons Forms on your next job. They can be rented with purchase option. Symons new instruction manual sent *free* on request.

Symons

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Construction Methods AND EQUIPMENT

JULY, 1960

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ABP

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Two portable air compressors with multi-drill rigs speed drilling for 30-inch gas line stretching from Texas to California.

World's Largest Rotary Compressors Ram a Pipeline Through the Desert!

Burying a pipeline from Texas to the West Coast calls for a tremendous ditching job — much of it in tough, rocky desert terrain. On the Arizona stretch, the contractor, H. C. Price Co., chose the most powerful equipment available to punch through the pipeline as quickly and economically as possible.

Two Le Roi 1200 Rotaries — the largest portable compressors made — are each teamed up with a crawler-mounted Le Roi 4-drill rig to do blast-hole drilling. Each rig simultaneously drills four 2¼-inch blast holes to a depth of six to eight feet, depending on terrain formation. The 1200 portable compressor and 4-drill rig combination saved time and manpower.

The Le Roi 1200 Rotary delivers a full 1200 cfm of free air at 100 psi — enough power to meet your biggest demands. The compact powerhouse has an 18 foot turning radius, and meets all existing state highway regulations.

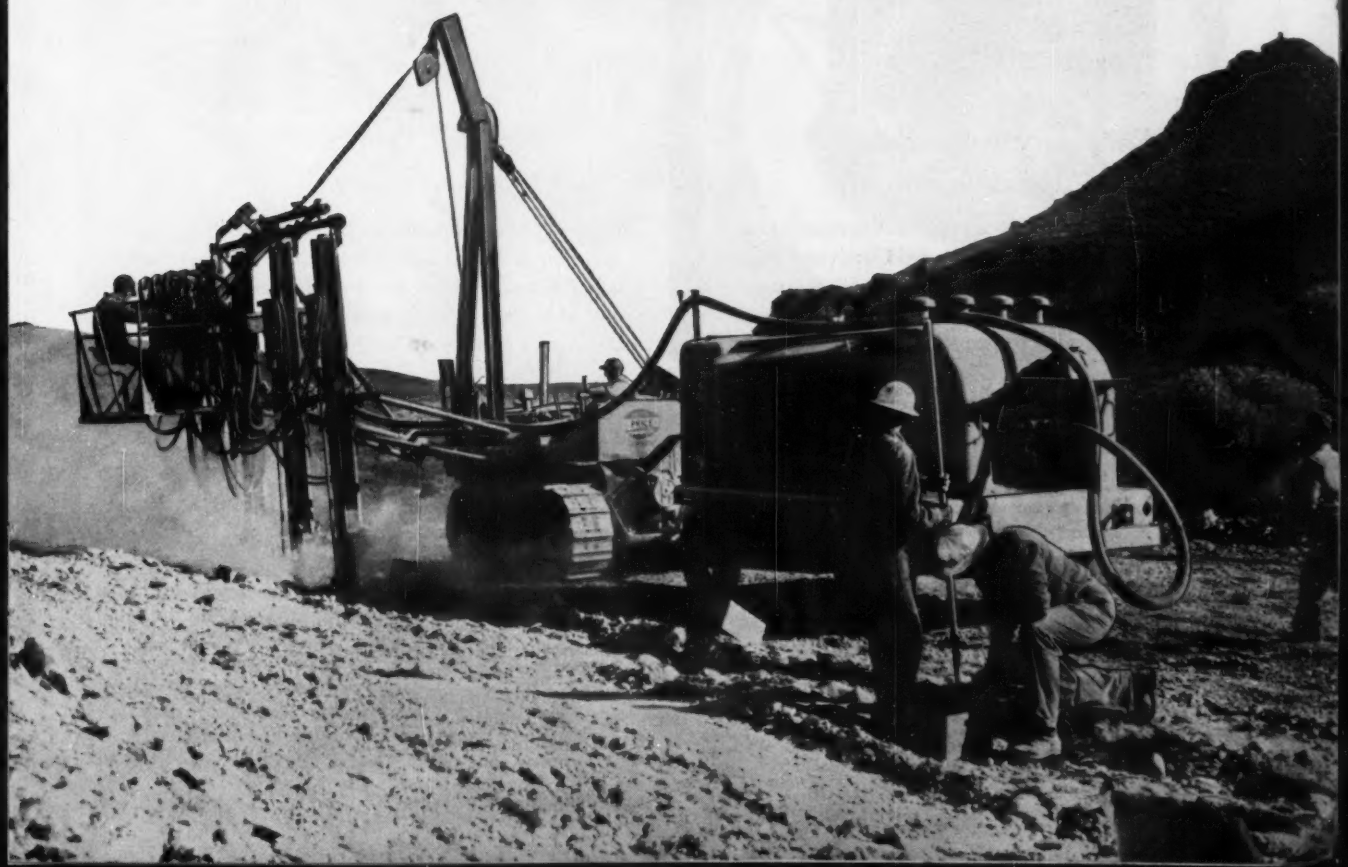
It's also the most flexible compressor on the market. Twin-unit design gives you two 600 cfm compressors that you can operate together for 1200 cfm or separately for 600 cfm of air. You can shut one unit off when air demand falls below 600 cfm, or for servicing without disrupting work. When air requirements are below 600 cfm, you can alternate use of units to equalize compressor life. What's more, interchangeable engine and compressor parts simplify servicing and protect you against costly emergency shutdowns in the field.

Ask your local Le Roi distributor for more information. Or write directly to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

PC-811

LE ROI ROTARY COMPRESSORS

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS



Equipment Maintenance Guide

JULY 1960

SPECIAL REPORT—

Profitable FIELD LUBRICATION Practices 86

HOW TO BUY A LUBE RIG 94

WELL-EQUIPPED LUBE TRUCKS.....108

Lubrication is the most important phase of preventive maintenance. This report discusses field lubrication practices and equipment. It is based upon a CM&E survey of contractors and lubrication equipment supplies across the country.

Maintenance At Niagara 113

The extensive maintenance programs set up by the six major contractors on the $720-million Niagara Power Project add up to a collection of proven maintenance ideas from some of the best equipment men in the construction industry.

Temporary Setups on a Tough Highway Job .180

Makeshift shops, such as the converted barn shown above, and mobile field service rigs form the nucleus of the maintenance operations for seven contractors currently constructing 20 mi of Interstate 89 west of Montpelier, Vt.

Foreman Coordinates all Job Maintenance 162

A preventive maintenance foreman directs an inspection crew that checks all the equipment on this job and lays out the work for the mechanics and the lube crew. Backing up the field maintenance is a big shop at the contractor's base.

Next Month

The forming subcontractor built just two sets of forms for the barrel arch shells of the new terminal building at Atlanta Municipal Airport. Wheels at the base of the scaffold legs made the units mobile, so they rolled them from bay to bay and concreted the 11 barrels, each 127 ft long, in just seven pours. Concrete flowed fast from a transit mix truck at ground level to buggies running along a timber runway. Job-built chutes distributed the concrete on each side from valley to crest of the shell.

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GORMAN-RUPP
DIAPHRAGM PUMP

Gorman-Rupp Model 3D-8BR6 pumping in 60-ft. deep excavation for California bank building.

guaranteed to outperform them all!

When this pump was purchased by the contractor, he bought it with the guarantee that it would "pump more dirty water, run more smoothly, outlast and outperform any similarly sized and comparably powered diaphragm pump on the market." In fact, the distributor was authorized to put the Gorman-Rupp Diaphragm Pump on the toughest pumping jobs—in competition with other make pumps of the same size and type. And—if the Gorman-Rupp did not prove to be the best all-around pump, we would accept its return and pay the user any installation expense. This pump and its guarantee are available to you. If there is any greater satisfaction than in being able to buy with that kind of assurance, it's in being able to build and sell with that kind of confidence.

THE GORMAN-RUPP COMPANY
305 Bowman Street • Mansfield, Ohio
Gorman-Rupp of Canada, Ltd., St. Thomas, Ontario

Who says you can't run boulders THIS BIG through a portable gravel plant?

Now you can...with Pioneer's

THE REVOLUTIONARY Big Red PORTABLE PLANT FEATURING...

No longer do you have to kick aside boulders larger than 8" across because the crushers on your portable gravel plant are too small . . . no longer do you have to leave them behind or bring in a primary crusher. And . . . no longer do you have to pull out of a pit before it's *really* depleted.

Mounting a 15" x 36" jaw crusher—*biggest ever carried by a portable duplex gravel plant*—Pioneer's Productioneer gobbles 14" boulders with ease. In addition, this all-new "Big Red" giant is equipped either with an oversize 40" x 30" twin roll crusher or a 36" cone crusher working in perfect balance with the jaw.

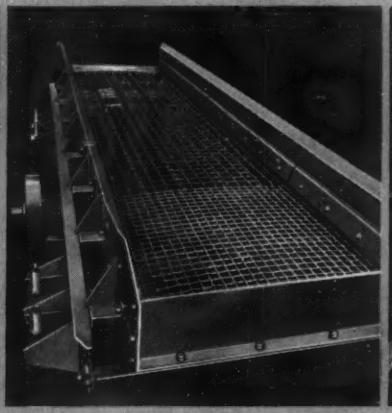
Big crushers like these require an equally large, high-speed vibrating screen . . . and the Productioneer really has it! The 5' x 14', 3-deck inclined screen provides 70 square feet of specification screening area.

Conveyors, of course, are all 36" wide.

1 15" x 36" JAW CRUSHER

Jaw opening is 50% greater than the size most commonly used . . . will accept boulders that are more than three times larger in volume.

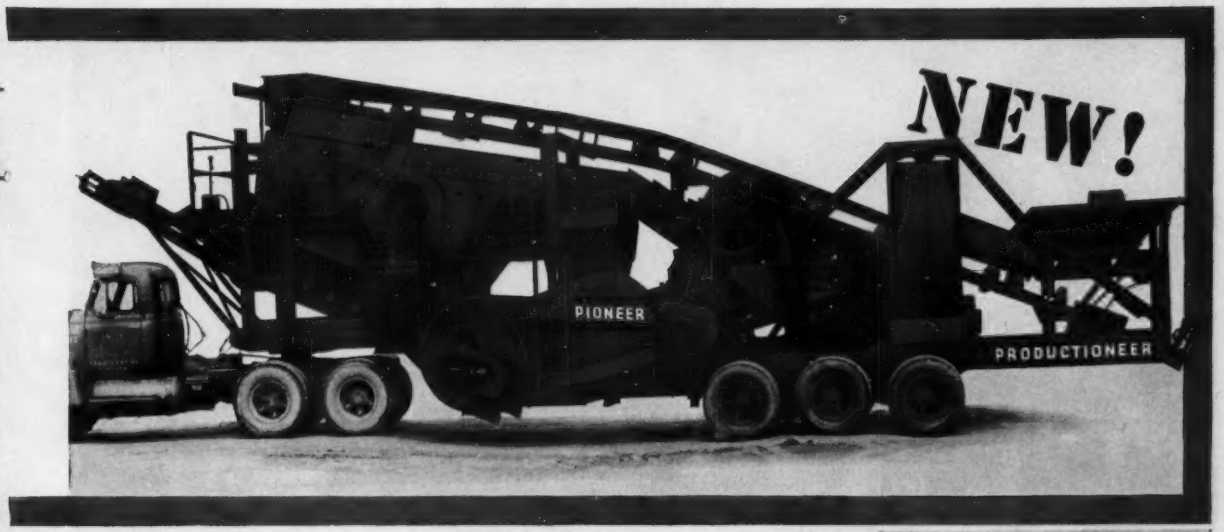
2 5' x 14', THREE-DECK PRODUCTION SCREEN



Six-inch clearance on both sides of top deck lets you change the second deck screen cloth from upper end without removing the top deck.

3 40" x 30" ROLL OR 36" CONE

Plants are available with either cone crusher (above) or twin-roll crusher, and as either mechanically or electrically driven models.



Productioneer!

These 15 superior features mean you produce far greater tonnages at less cost per ton than ever before possible

Thoroughly field-tested, Pioneer's Productioneer is already at work in both midwest and mountain areas. Reports on these applications now warrant our saying that the Productioneer can virtually revolutionize current portable production practice.

1 Inclined vibrating screen runs at extra-high speed . . . is rugged enough to withstand 14" boulders.

2 Entire third deck or whatever portion you need can be used for sand rejection. Plant is ideal for working excessively sandy pits.

3 Hoppers and spouts are provided to produce up to three product sizes.

4 When you choose this plant equipped with a cone crusher, you get the only duplex plant on the market using a cone secondary.

5 When you choose a roll crusher equipped Productioneer, you get a full 30" of working shell surface, 25% wider than used on ordinary plants.

6 Both the jaw *and* the roll crushers are equipped with hydraulic-shim mechanism for easy adjustment.

7 *Fully equalizing* triple axle divides the bulk of the plant's weight evenly over twelve 9:00 x 20 pneumatic tires.

8 Rear assembly carries bucket wheel and hopper, detaches quickly without use of crane for increased travel ease. (See number one photo at left.)

9 Plant-mounted feeder is heavy-duty 36" size . . . runs on anti-friction bearings, has rubber impact idlers under feeder to protect the conveyor belt.

10 36" feed conveyor has ball-bearing, non-jamming clutch control. Wrap-driven for better starting.

11 Hand-controlled hydraulic pump lowers feed conveyor to reduce travel height.

12 Single 36" return conveyor handles product from both crushers. No transfer or extra conveyor to drive.

13 90" x 28" bucket wheel has monorail friction drive on hardened alloy steel rollers and rail. Flights are replaceable and reversible.

14 36" end delivery conveyor has 10' clearance, is independently controlled by clutch or electric push button.

15 All driving pulleys have vulcanized, herringbone rubber lagging . . . all non-driving pulleys (except main feed conveyor) are wing-type.

PLUS . . . *many other time and money saving features. If big-time production is your goal, check into this brilliant new portable duplex gravel plant today!*

LOOK FIRST TO THE **Big Red** EQUIPMENT

Get all the profit-making details from your Pioneer Distributor

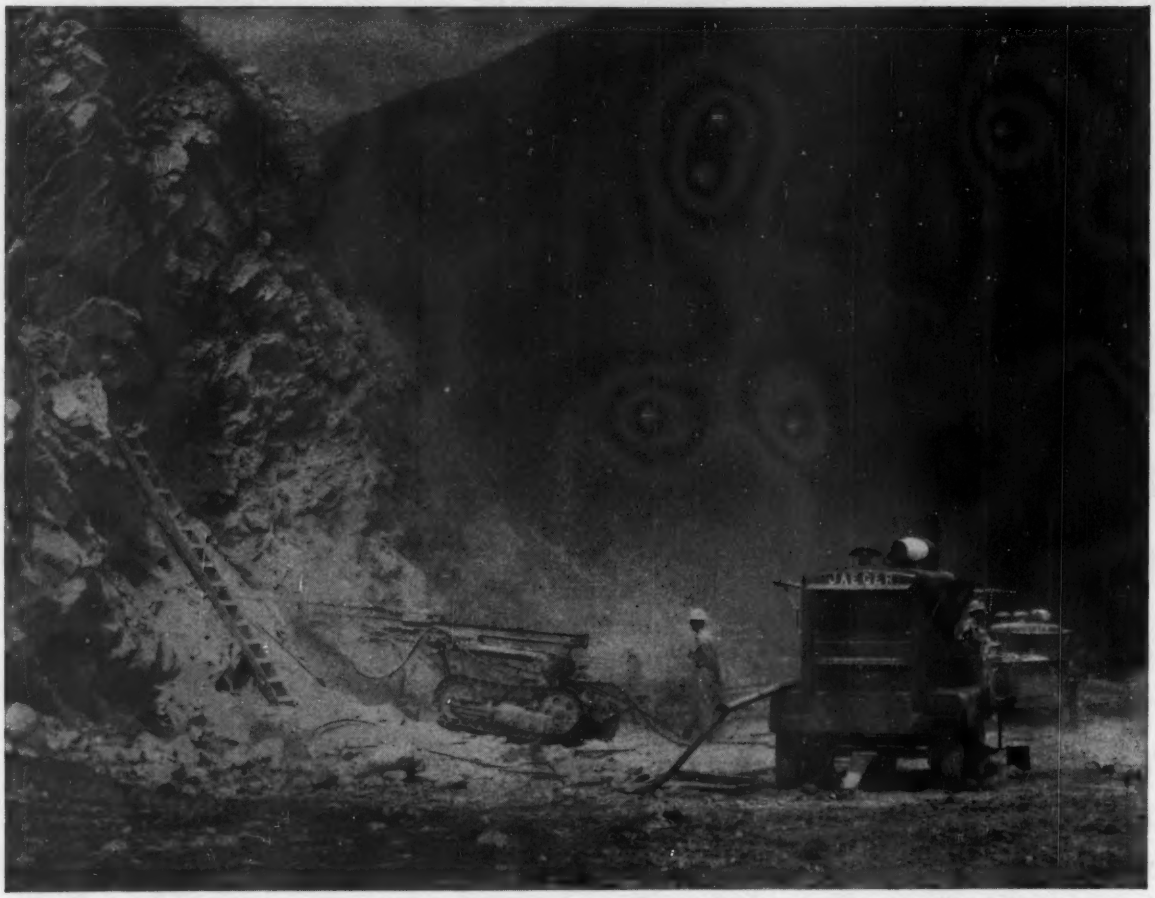
BITUMINOUS MIXING PLANTS AND PAVERS

STATIONARY QUARRY AND WASHING PLANTS

Manufactured by

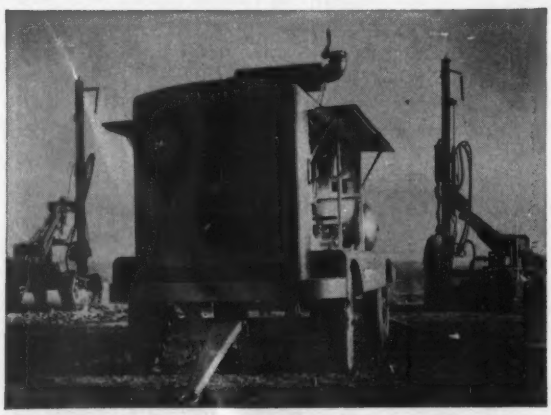
Pioneer ENGINEERING

DIVISION OF POOR & COMPANY, INC.
Minneapolis 14, Minnesota



TOUGH ROCK. On this Rocky Mountain excavation nearly all of the rock was badly fractured and schisted as well as being highly abrasive. Bits lasted an average of only 15 feet. This job was done with crawler drills powered by a battery of Jaeger "600" compressors.

Jaegers cut air costs on tough 1,300,000 cu. yd. Rocky Mountain excavation



A Jaeger rotary "600", using the same GM 6-71 diesel engine as used in other "600" rotaries, delivers its rated capacity at 100 rpm slower speed — 1700 instead of 1800. In an 8-hour full-load operation, the Jaeger's engine does its work in 48,000 fewer revolutions.

Because it runs slower, it saves miles of engine piston travel and pounds of fuel every working day. The engine requires less maintenance . . . lives a longer operating life.

The compressor unit in a Jaeger lasts longer, too. 8000 hours without a vane replacement is not unusual. Ask any Jaeger owner; ask your Jaeger distributor — or send for new catalog JC-O.

← **LOW COST AIR FROM THIS "900", TOO.** The Jaeger "900" uses the same GM 6-110 diesel engine as other "900" rotaries, yet it produces its rated capacity at 100 rpm slower speed (1700 instead of 1800). Consequently, a Jaeger "900" produces more than 500 cf of air per pound of fuel. And it needs less maintenance, has a longer life. Other Jaeger models, from 75 to 365 cfm, are of comparable efficiency.

THE JAEGER MACHINE CO., 800 Dublin Ave., Columbus 16, Ohio

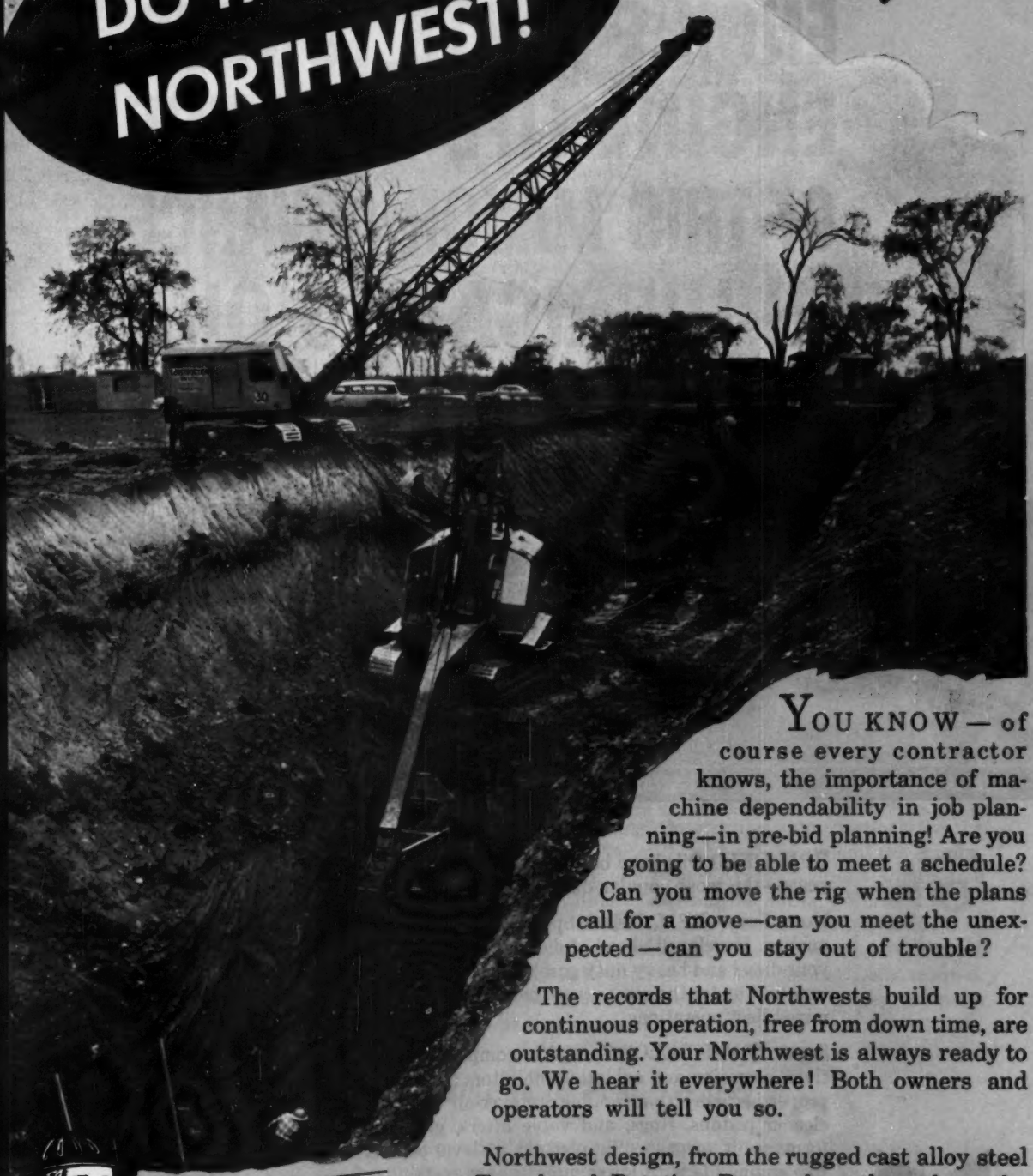
Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

World-wide sales and service through Jaeger International Corporation, Apartado 137, Panama, R.P.

PUMPS • MIXERS • TRUCK MIXERS • PAVING MACHINES

DO IT WITH A NORTHWEST!

...They're Always Ready to GO!



YOU KNOW — of course every contractor knows, the importance of machine dependability in job planning—in pre-bid planning! Are you going to be able to meet a schedule? Can you move the rig when the plans call for a move—can you meet the unexpected — can you stay out of trouble?

The records that Northwests build up for continuous operation, free from down time, are outstanding. Your Northwest is always ready to go. We hear it everywhere! Both owners and operators will tell you so.

Northwest design, from the rugged cast alloy steel Travel and Rotating Bases clear through to the tip of the dipper, bring you the dependability that assures carrying a job through on schedule.

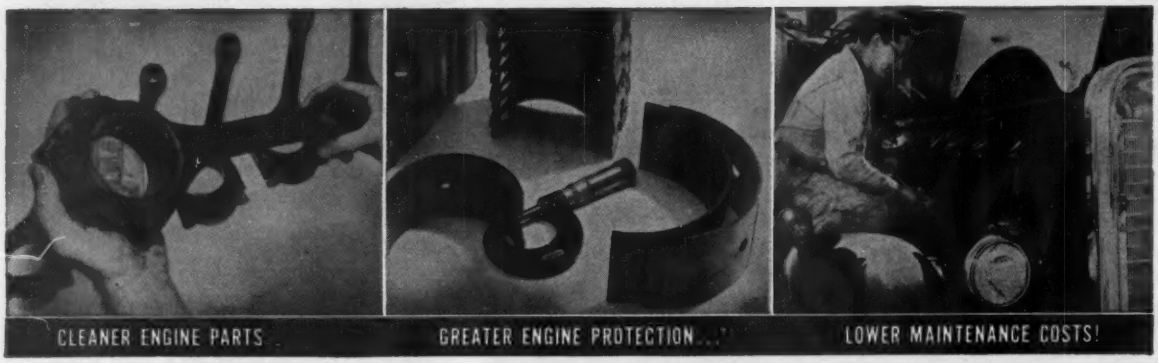
Northwests get the job done!

Let a Northwest man tell you in detail about the many Northwest advantages.

NORTHWEST ENGINEERING COMPANY
1503 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois

NOW-YOU GET CLEANER ENGINE PARTS, LONGER ENGINE LIFE BECAUSE OF THIS MAJOR ADVANCE IN LUBRICATING OILS

SUPER RPM DELO SPECIAL



RPM DELO Oils have been quality leaders in the lubricant field for over 25 years—the most popular dual-purpose engine lubricants ever developed.

Now, Super RPM DELO Special Lubricating Oil sets a new standard of quality. Developed ahead of diesel engine design, it upgrades performance in your diesel and heavy duty gasoline engines—thoroughly tested in the laboratory and under the most severe field conditions. It is particularly effective for mixed fleet operations.

Super "RPM DELO" Special is compounded with Detergent-Action additives, corrosion and oxidation inhibitors and defoaming agent. These built-in properties more than double its over-all compounding effectiveness, assure cleaner pistons, rings, and valve lifters, greater engine protection. In performance it surpasses Supplement #1 level oil and results in longer trouble-free engine life with lower maintenance costs.

For longer engine life, real engine economy, ask your local representative about Super "RPM DELO" Special, *or write any company listed below:*

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • **STANDARD OIL COMPANY OF TEXAS,** El Paso
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Construction News From Washington

Washington, D.C.
July, 1960

Congress Winds Up

Congress approved essential construction bills before it closed shop for the party conventions. The shadow of possible Presidential veto still remained over some items as the legislators left Washington. But Congress, at least, had cleared the most vital construction legislation by the time the lawmakers took off for the big political jam sessions.

Heading its roster of vital measures, Congress scheduled a fast cleanup job on money bills to supply needed cash for $7.5 billion of federal construction spending during the fiscal year that began July 1. Indispensable appropriations moved in lock step with necessary authorizations to keep construction moving on a long list of major programs—rivers and harbors, flood control, reclamation, government buildings, military bases, highways, atomic energy plants, airports, housing, urban renewal, college dormitories, and community facilities.

Log-Jam Delays Money Bills

A legislative pile-up in the middle of June temporarily slowed Senate action on appropriations for military and public works construction. Congress and the military had taken a second look at defense needs in Senate hearings after the summit breakdown.

Congress first upped military construction authorizations for the current year to $1.2 billion, $43 million above the amount the Administration requested. Then the Senate Appropriations Committee took hold of the $885 million money bill for military works that the House had passed on the pre-summit recommendation of its own committee. This economy-minded group had chopped $303 million out of the $1.2 billion in new funds that the Defense Dept. wanted. The Senate restored most of the cuts and added money for post-summit missile bases and the like.

Paired Bills Boost Public Works

Last-minute doubling-up of authorization and appropriation bills for public works produced extra Senate dividends for Army Engineer and Bureau of Reclamation projects. The Appropriations Committee delayed writing its version of the money bill for fiscal 1961 until the Senate received and acted on a 1960 Rivers and Harbors Authorization Bill. Nearly 75 new projects—added by the Senate Public Works Committee—increased the authorizations to $1.5 billion, $850 million above the bare essentials approved a year ago by the House. The earlier House version authorized 54 new projects.

From the over-all total of some 130 projects in the authorization bill, the Senate then was able to select the new starts it wanted to add to the 39 approved by the House under the $1.4 billion it voted for construction in the Public Works Appropriation Bill. Senate action increased this construction total for the current year.

Future Projects Will Be Easier to Sell

A Senate addition to the House-passed Rivers and Harbors Bill authorizes use of recreational benefits on the plus side of the benefit-cost ratio that determines the economic feasibility of Army Engineer and Reclamation projects. The Water Resources Recreation Act of 1960, added to the House bill by the Senate committee, allows recreational benefits to be included in the economic evaluation of proposed projects—up to 10% of total project cost, or even more in special cases.

Added weight on the credit side strengthens the economic justification of proposals submitted by the Corps and the Bureau to White House budget people and to the Congress.

Housing Bill Shaped to Win Acceptance

Both the House and the Senate rushed action last month on omnibus housing legislation designed to avoid a Presidential veto. Concurrent bills in the two houses carefully omitted any authorization for additional public housing starts and for use of Treasury funds to finance mortgages on new home construction.

The legislation held close to provisions the President wants, such as continuation of the home improvement loan program, plus increased authority of close to $1 billion for three heavy construction programs: urban renewal, college dormitories, and local public works.

States Get $2.9 Billion for Contract Awards

Since early March, state highway departments have tentatively programmed contract lettings for the current fiscal year on the strength of advance notice that the Bureau of Public Roads would authorize them to obligate $2.9 billion of federal funds, 25% in each quarter. Last month, the states received confirmation of the figures that previous forecasts had indicated.

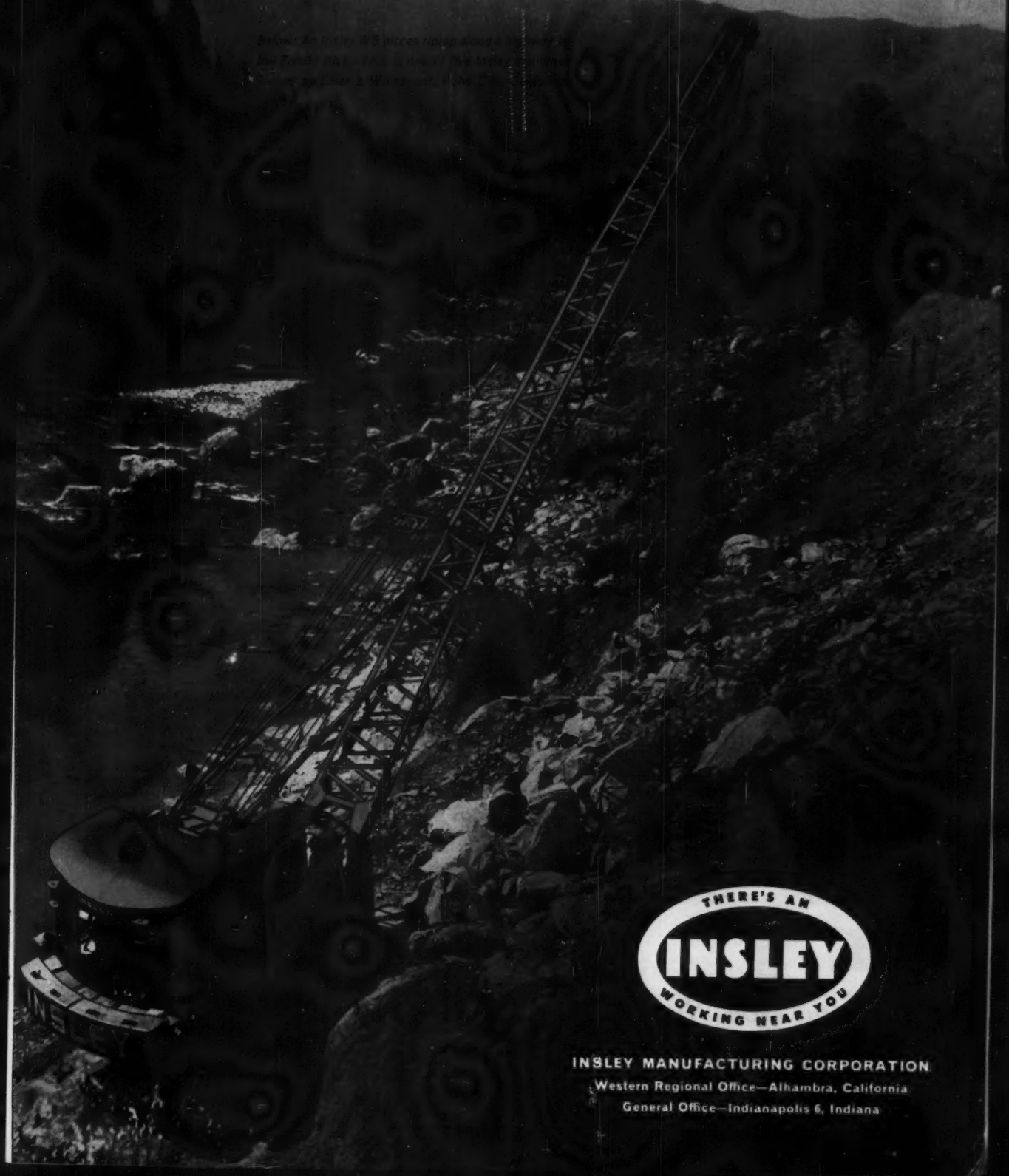
Each state, as foretold in March, received its share according to the same formulas used last fall in apportioning authorized federal aid for fiscal 1961, with minor modification. Four states got a bit more than the formulas allowed, in order to obligate three-year-old federal-aid authority that otherwise would lapse if not put to contract this year. The slight increase to these four states was deducted proportionately from the amounts allotted to the other states.

The states can obligate their lump-sum total of federal dollars as they wish, on either Interstate or ABC projects. With state matching funds added, contractors can look for some $4 billion of highway contracts to come out of the federal $2.9 billion allotment.

There's an Insley working near you

● For rugged jobs in rugged country, count on the rugged Insley WB. Insley machines are designed to get the job done—in swamplands or in mountains—at a minimum of time and cost. Insley machines also are "power matched" to capacity for top performance, efficiency and long life.

See your Insley distributor today. Get the facts on the complete Insley line—5 to 45 ton crane capacity, ½ to 1½ cu. yd. bucket capacity, crawler, self-propelled carrier and truck mountings.



THERE'S AN **INSLEY** WORKING NEAR YOU

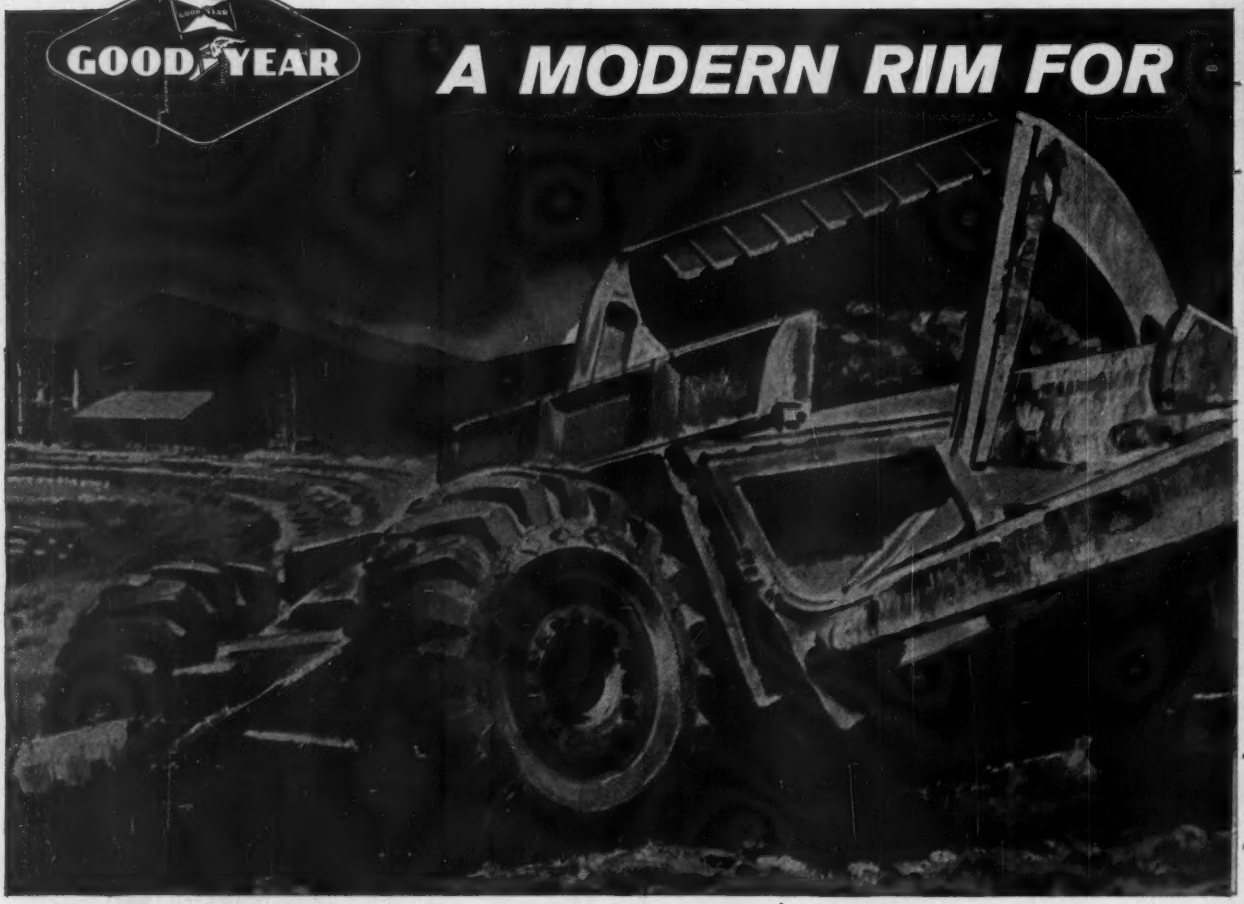
INSLEY MANUFACTURING CORPORATION

Western Regional Office—Alhambra, California

General Office—Indianapolis 6, Indiana

GOODYEAR

A MODERN RIM FOR



The New Earth-Mover

40% Stronger—only 6% Heavier

Today's earth-movers are carrying bigger loads than ever—and moving them faster, too.

To meet the added strain imposed on rims, Goodyear, long-time leader in rim development, has introduced a complete new line of Earth-Mover Rims. Although 40% stronger, these new rims are only 6% heavier.

With Goodyear rims you enjoy such added benefits as a heavy-duty bead seat band driver—to prevent slipping under severest operating

Buy and Specify RIMS by **GOOD**

TODAY'S MASSIVE LOADS

Rim

Only Goodyear Rims
have *Bond-A-Coat Finish,*
for lasting protection
against rust and corrosion

conditions. And you get the positive air seal provided by Goodyear's famous Tru-Seal.

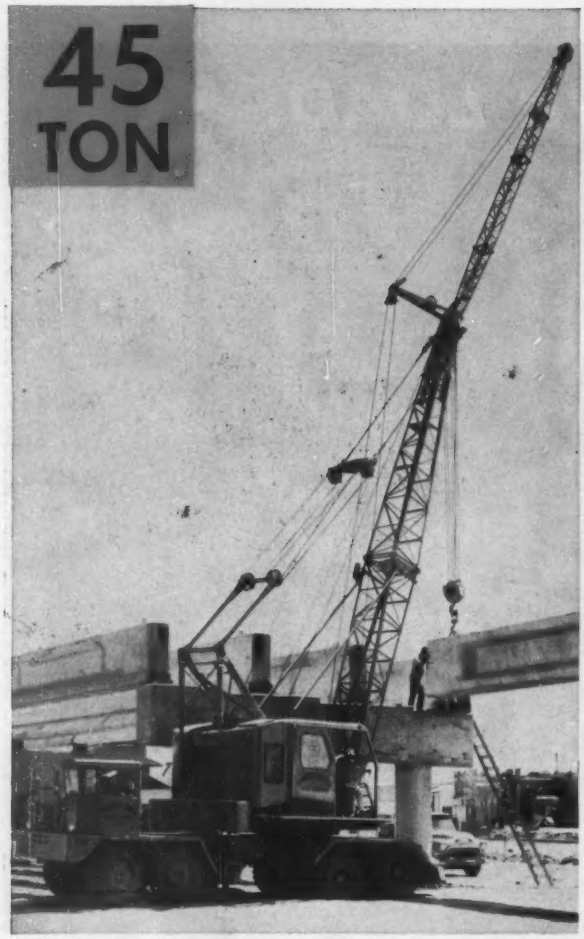
Goodyear makes rims in widths up to 37″ and in diameters up to 49″. To prevent premature tire and rim failure, it pays to buy and specify rims job-fitted by Goodyear. See your local rim distributor, or write: Goodyear, Metal Products Division, Akron 16, Ohio.

Send for Free Goodyear Rim Catalog
—84 pages of facts and pictures on Goodyear's complete line of rims for every type of vehicle.

GOODYEAR

More tons are carried on Goodyear Rims than on any other kind

Tru-Seal—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio



Koehring 445 walks precast bridge member into place on Colorado highway job.

Koehring 555 on Long Island expressway contract sets heavy concrete manhole.

UNDER LOAD OR ON THE ROAD

NOTHING HANDLES LIKE A KOEHRING

Koehring heavy-duty truck cranes give you the mobility and stability to get toughest lifting assignments finished quickly. Mounted on rugged 4-axle truck, they convert quickly from fully equipped crane to roadable machine for traveling. Counter-weight, boom, and outriggers can be easily removed to reduce machine weight to meet road limits.

You get extra work capacity for safe, sure lifting and spotting. Booms have combination pin-pad connections . . . combine safety of bolted connections with quick-change advantages of pin connections.

For complete information, get in touch with your local Koehring distributor or write to us for catalogs . . . do it soon. K34

MORE WORK CAPACITY...
MORE PROFIT PER DOLLAR INVESTED

KOEHRING
DIVISION OF KOEHRING COMPANY
Milwaukee 16, Wisconsin

COMPARE BUFFALO-SPRINGFIELD 3-WHEEL ROLLER WITH ANY OTHER

TAKE a good look into the Buffalo-Springfield 3-wheel roller . . . compare it with other makes on the market. You'll find solid reasons why the Buffalo-Springfield 3-wheel has long been a favorite among contractors. Here are just a few advantages: each drive roll has heavy-duty, double-shoe type, self-energizing power brakes. *All* rolls run on tapered roller bearings. Field-proved 4-speed transmission delivers a full range of road speeds at full power. All internal parts operate in oil bath. Bevel gear differential provides smoother operation around curves.

When the 3-wheel does need adjustments — and this doesn't happen too often — they can be made in minutes. Large inspection covers give quick access to all working parts. You don't have to dismantle one part of the machine to get at service points . . . save time. Clutches are well forward of drive rolls and protected against dirt and grit by metal shrouds. Both are readily accessible at all times.

For the full story on the quality Buffalo-Springfield 3-wheel roller, and facts on how it can save you money over the long haul, see your Buffalo-Springfield distributor. Variable weight 10-14-ton and 12-15-ton models available. BS

BUFFALO-SPRINGFIELD CO.
Springfield, Ohio

A Division of KOEHRING *Company*

LUBE LOGIC Five tips to

How to return stored engines to service

In a previous issue of Lube Logic we gave you an 11-point program designed to protect gasoline and diesel engines during long idle periods. Now we'd like to finish what we started by describing the routine for taking engines *out* of storage and putting them back into action.

1 Where Texaco Rustproof Compound L has been applied to exterior of engine, remove with kerosine.

2 Remove waterproof paper and tape from all openings.

3 Remove spark plugs. Clean them and check the gap settings before replacing.

4 Remove distributor cap and clean Texaco Rustproof Compound L thoroughly from lobe of breaker cams. Replace cap.

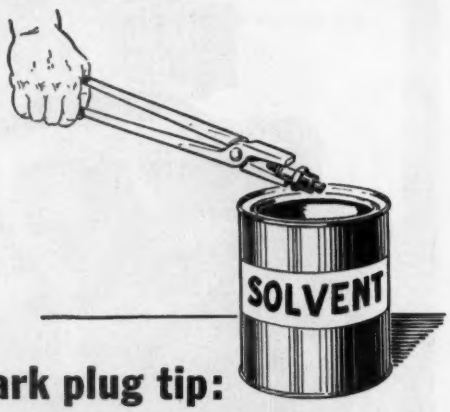
5 Check the level of the crankcase oil. If it's at the full mark, there's no need to drain the oil before operating the engine unless it requires a different grade. If the oil has fallen below the full mark during storage, drain the engine and locate the oil leak, and repair it, then refill with the proper grade of oil, before operating the engine. The first oil change after the engine is back in service should be made in half the usual period.

6 Check the cooling system for leaks, and add water or Texaco PT Anti-Freeze if necessary. It's not necessary to drain and flush if the cooling system was filled with a rust-inhibited anti-freeze before storage.

7 Fill the fuel system, start the engine, and let it run for a while. Check the oil pressure, and check for overheating and oil and fuel leaks.

End-of-shift is the best fueling time

They say there's a time and a place for everything, and for refueling equipment the best time is at the end of each day's work. And here are two reasons why. End-of-shift minimizes the possibility of fuel-tank rusting, because there's no room for condensate to form in a tank that's full of gasoline or diesel fuel. And tank-bottom sediment, stirred up by pumping in fuel, has a chance to settle down overnight, so it won't be drawn into the fuel line.

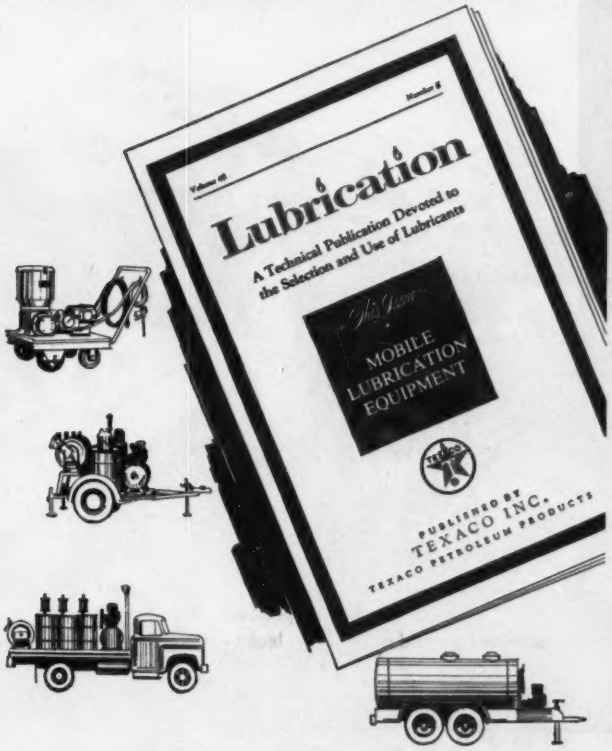


Spark plug tip: Degrease before you blast

Don't depend on your spark plug cleaner to do everything. As a matter of fact, you can actually make things worse by blasting an oil-fouled plug. Heavy oil deposits on the plug will pick up the abrasive and hold it in the recesses between the shell and the insulator. Result: burning and ultimate failure because these deposits can seriously affect the spark plug's ability to dissipate heat at high engine speeds.

Moral: degrease oil plugs in a suitable solvent and dry them *before* you blast.

prolong equipment service life

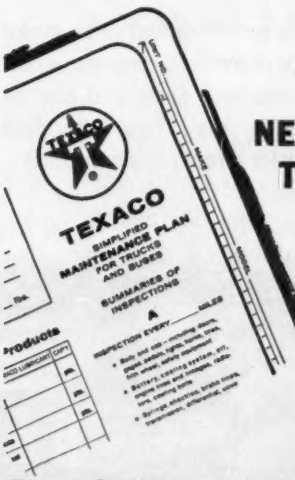

Lubrication
A Technical Publication Devoted to the Selection and Use of Lubricants
MOBILE LUBRICATION EQUIPMENT
PUBLISHED BY TEXACO INC.
TEXACO PETROLEUM PRODUCTS

The whole truth about mobile LUBE RIGS

- What good lube rigs are made of—the products and the dispensing equipment.
- How to use lube records to make your rig more valuable.
- Special purpose lube rigs.
- Pros and cons of mobile and centralized lubrication.

What does it take to make a mobile lube rig? What do you put on it? How do you use it? The questions have been coming in so fast lately that Texaco has devoted a whole issue of its magazine, *Lubrication,* to answering them: the March 1960 issue, titled "Mobile Lubrication Equipment."

Lubrication is a major factor in cost control, and lube rigs can be a major factor in thorough maintenance, so send for your free copy of the March *Lubrication.* Supply of these valuable booklets is limited, so if you want one, send in your request *now* to Texaco Inc., 135 East 42nd Street, New York 17, N.Y., Dept. CM-11.



NEW TRUCK RECORD FOLDER fits itself into your schedule

Texaco's flexible new truck record folder lets you stick to the lube schedule that works best for you without running into bookkeeping problems. Lubrication and oil schedules are completely separate from mechanical maintenance and replacement parts schedule—you don't have to follow any pre-established routine to use the folder profitably. And this new folder accounts for every single dollar you spend on truck maintenance for a whole year. Get yours now.

Tune In: Texaco Huntley-Brinkley Report, Mon. Through Fri.-NBC-TV

TEXACO LUBRICATION ENGINEERS

Every now and then we'll bring you a batch of "sleepers," little angles, so easy to overlook, where big savings in money and time can be made. If Lube Logic doesn't solve your problems, call your local Texaco man. Anytime, all the time, he's your best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

TEXACO

Throughout the United States

Canada • Latin America • West Africa

The TS-14

Excellent maneuverability and all-wheel drive make the TS-14 an ideal machine for land clearing, grading plant sites, etc. Self-loading sand and clay at this housing development, the "Twin" handled clearing and grading work for streets and home sites.

Low, wide bowl and 4-section cutting edge speed loading in any scraper material . . . blade sections are adjustable, reversible and identical. Ability to work without pusher assistance makes this "Twin" an efficient scraper for stripping jobs in sand and gravel operations, mines, and quarries.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

all-wheel drive "EUC" is a one man spread!

another Euclid engineering advancement . . .
"Twin" puts more profit in every payload!

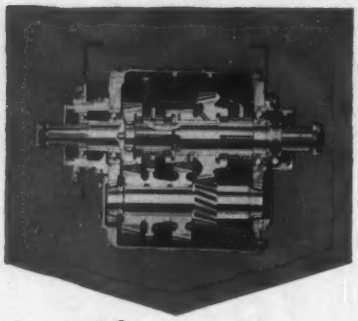
Here's performance and work-ability in a 14 yd. scraper . . . 20 yds. heaped . . . that's way ahead of any machine of comparable size. With two engines and separate Torqmatic Drives for each axle, the TS-14 provides all of the cost cutting advantages of all-wheel drive in a medium size scraper.

This new "Twin" self loads in practically any material and with a pusher for loading it's a big producer on even the toughest jobs. There's plenty of power and traction to get a heaped load in a hurry . . . to get out of the cut or borrow pit fast . . . and to really highball on the haul road. The TS-14 does a wide range of work, with or without a pusher, and is the most versatile scraper in its class.

Steep grades and adverse conditions that slow down or stall other scrapers are routine for the "Twin" . . . it can work more days per season and give you a bidding advantage on that next job or cut earthmoving costs on your present work. Get the performance facts from your Euclid dealer or write for the new catalog No. 555.

EUCLID DIVISION OF GENERAL MOTORS • CLEVELAND 17, OHIO

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland



Specify

FULLER

Specify the

MODEL

For medium-heavy duty trucks and tractors specify the

FULLER '65 SERIES

3-SPEED AUXILIARY

- **High capacity**
- **Widest range of ratios**
- **Top-mounted power take-off optional**
- **Low initial cost, reduced maintenance**
- **Available from all truck manufacturers on specification**

65 SERIES
(Medium-heavy-duty)
RATIOS

MODEL	SPLITTER RATIOS High	SPLITTER RATIOS Intermediate	DEEP REDUCTION Low
3-A-65	.754	1.00	2.221
3-B-65	.804	1.00	1.239
3-C-65	.754	1.00	1.239
3-D-65	.804	1.00	2.221
3-E-65	.804	1.00	1.74
3-F-65	.754	1.00	1.74
3-G-65	1.00	1.32	2.221
3-H-65	1.00	1.32	1.74

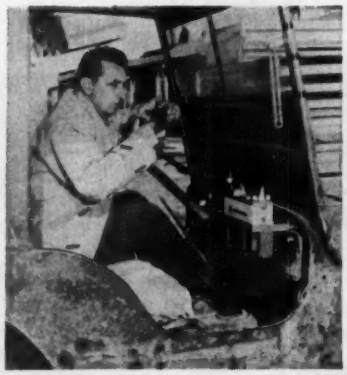
Specify

Specify the **MODEL**

FULLER MANUFACTURING COMPANY
(Transmission Division)
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

Job Talk...

Portable Radios Link Job's Key Men



On a big housing project in New Jersey, key men take their two-way portable radios with them everywhere on the job. The units are mounted in the supervisors' Jeeps, but they can be detached and carried by shoulder strap when the men are on foot.

The radios help Terminal Construction Co. of Wood-Ridge, N. J., to coordinate work on their multi-million dollar job at McGuire Air Force Base. Each of 12 field supervisors is assigned a Jeep and a portable radio. The lightweight Motorola Handie-Talkie Portable Radiophones are securely mounted in the Jeeps in shockproof brackets that protect them from jolts and jars. They plug into vehicular antennas.

In addition to the portable radios, the company has installed three larger mobile units in vehicles driven by the general superintendent, the head field supervisor, and the head field engineer. A 60-watt base station with a 50-ft-high antenna powers the system. The hookup includes two remote-dispatching points, one at the equipment storage office and the other in the office of company Vice President A. M. Dinallo.

Communications are vital in coordinating the work of many different subcontractors on a project where units under construction are scattered over a 2-mi area. A decision affecting the work may be needed from a supervisor far away—the portable radio finds him in a hurry.

It also helps in getting material to the spot where it is needed to prevent idling a crew. More than 600 different items may move out of the warehouse in a single day. And when a piece of equipment breaks down, the radio summons a mechanic in a jiffy.

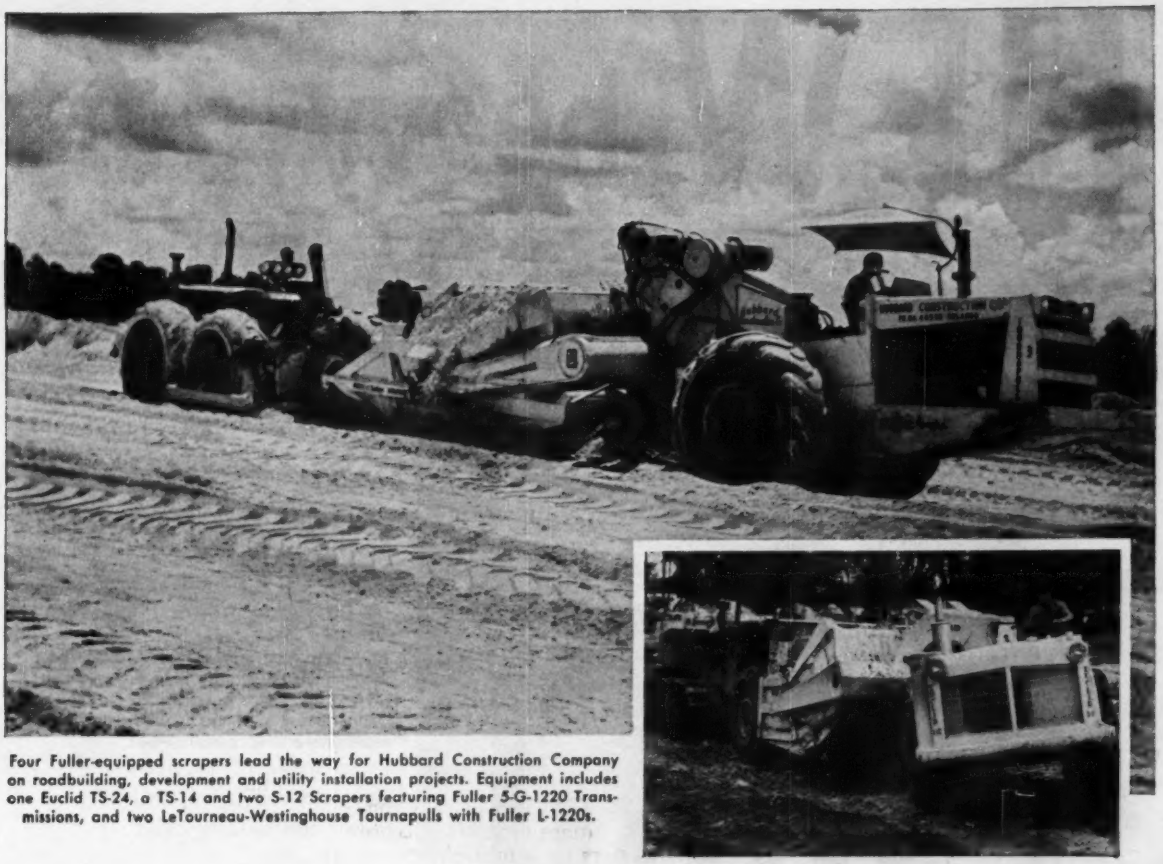
All in all the radios offer a substantial savings in time, enough so that Terminal Construction will complete the project on schedule by the end of the year. They estimate that the cost of the radio system will be realized on this one job.

Adhesive Bonds To Wet Concrete

A bonding layer of polysulfide-epoxy adhesive used to resurface concrete pile caps severely damaged by a fire saved the tremendous cost of dismantling and rebuilding the South Bronx Marine Transfer Terminal in New York.

Ravaged by fire before completion, the building will be finished this summer, some three years earlier than original estimates. Because ordinary resurfacing techniques would not provide a waterproof bond, it looked like the damaged pile caps would have to be replaced. And that meant removing the structure.

continued on page 27



Four Fuller-equipped scrapers lead the way for Hubbard Construction Company on roadbuilding, development and utility installation projects. Equipment includes one Euclid TS-24, a TS-14 and two S-12 Scrapers featuring Fuller 5-G-1220 Transmissions, and two LeTourneau-Westinghouse Tournapulls with Fuller L-1220s.

Geared by FULLER . . .

"We get faster work cycles and longer life with countershaft brake and pressure lubrication systems."

"Reliability, economy and serviceability are exceptionally important in purchasing new construction equipment," says J. C. Reddick, Vice President, Hubbard Construction Company, Orlando, Florida. "Fuller Transmissions meet the requirements for long life and fast work cycles that we must have in our scraper operations."

Fuller's countershaft brake gives quick, easy upshifts without double clutching, keeps speeds up and cuts cycle time. The pressure lubrication and filtration system prolongs gear and bearing life.

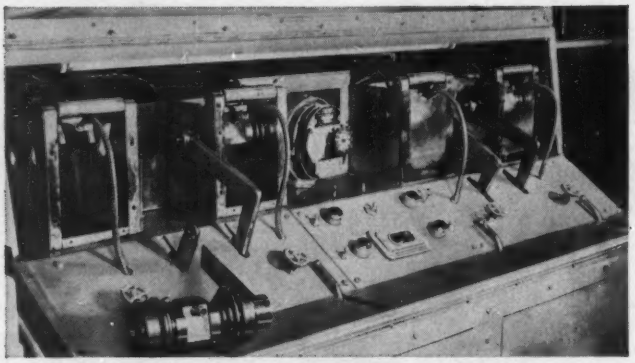
For long life, easy shifting and positive lubrication in your scraper operations, specify Fuller Transmissions which include the countershaft inertia brake and pressure lubrication and filtration systems.

Ask your dealer about these features designed to put more profit in your operation.

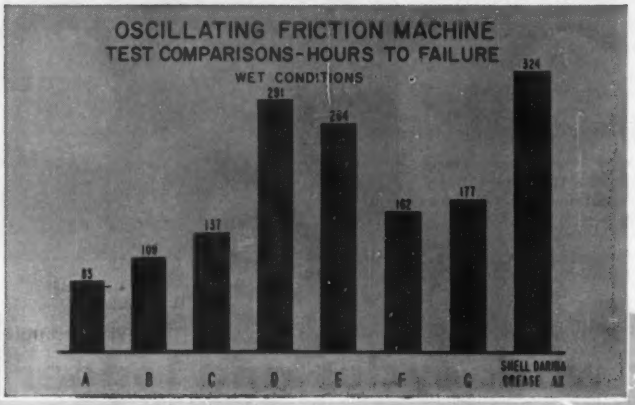
FULLER TRANSMISSION DIVISION
MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla. Automotive Products Company, Ltd., Automotive House, Great Portland Street, London W.1, England, European Representative

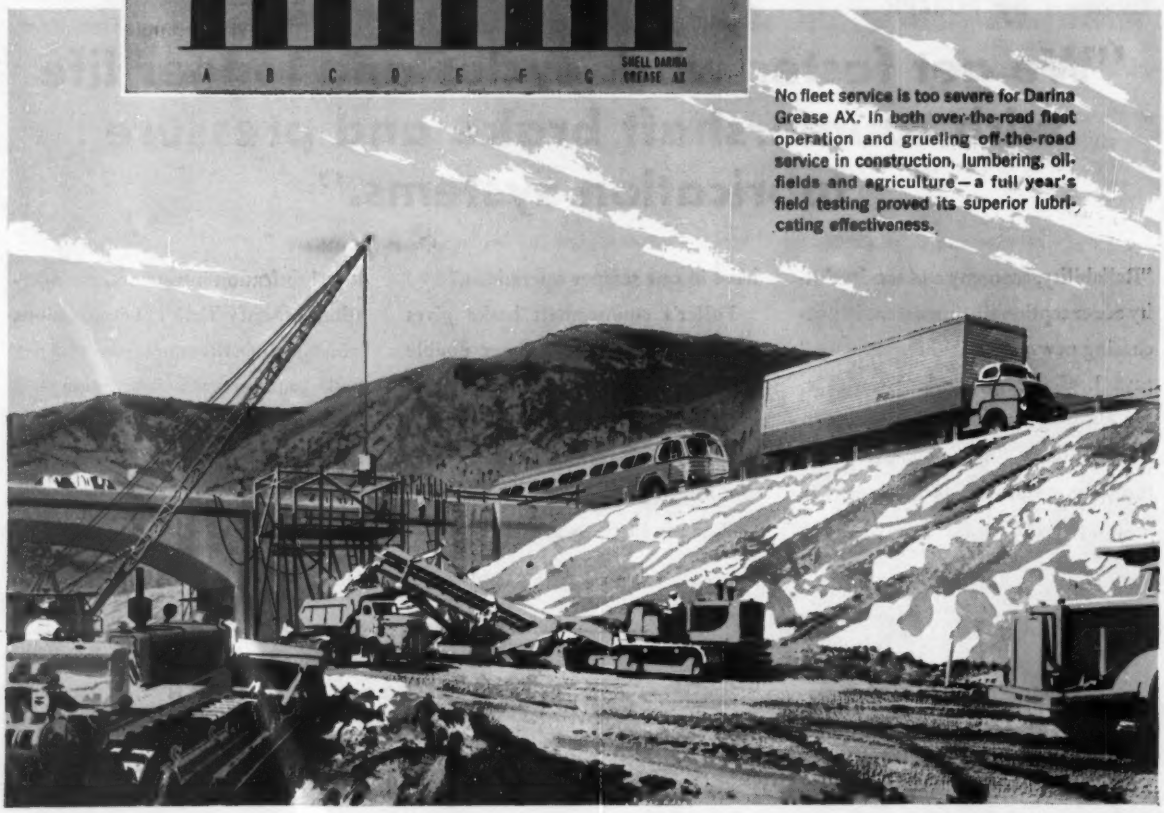
NEW heavy-duty sets



The Shell Oscillating Friction Machine that proves the superior effectiveness of Shell Darina Grease AX under both wet and dry conditions is shown.



No widely used grease—not even the best premium, multi-purpose greases—can compare to the "hours to failure" record set by Darina Grease AX. Chart shows results of the more severe "wet" condition test.



No fleet service is too severe for Darina Grease AX. In both over-the-road fleet operation and grueling off-the-road service in construction, lumbering, oil-fields and agriculture—a full year's field testing proved its superior lubricating effectiveness.

automotive grease endurance test record

New findings about Shell Darina Grease AX change maintenance practice for heavy-duty fleets

The toughest job for automotive greases is in shackle-type bearings where the movement is confined to short arcs of 15 degrees or less. Until now, however, most machines that evaluated greases used *rotating* bearings.

The Shell OFM Test (Oscillating Friction Machine Test) equipment, shown on left, duplicates severe *oscillating* service conditions. Bar chart shows how one grease—Darina® Grease AX—outlasts other greases.

Shell Darina Grease AX is a new development that is based on a waterproof MICROGEL* component. Contains *no soap!* Developed by Shell Research to give these qualities:

WASHOUT RESISTANCE. In ASTM water washout test, loss of Darina Grease AX was only one percent compared to washout rates as high as 12% for conventional multi-purpose greases.

WATER ABSORPTION. Tests prove that even water saturation cannot destroy the lubricating efficiency nor metal adhesion properties of Darina Grease AX.

MECHANICAL STABILITY. Darina Grease AX won't liquefy and run out. Its stability is unexcelled by any other type multi-purpose lubricant.

Road Service Confirms Tests

Results are in from sixteen major operators of heavy-duty equipment covering 30 million miles and a wide range of service. Report after report shows how Darina Grease AX extends wheel bearing and chassis lube mileage.

Over 1000 automotive units were used. The results in all cases showed that Darina Grease AX provided superior lubrication for wheel bearings, shackles, kingpins, steering linkages, and other chassis parts.

Shell Darina Grease AX is specially formulated to lubricate heavy-duty equipment that operates under adverse conditions of terrain and climate.

No matter what type of heavy-duty fleet vehicles you operate, you will want the full story on Shell Darina Grease AX. Write or phone today.

*Trademark

SHELL OIL COMPANY

50 West 50th Street.....New York 20, New York
100 Bush Street.....San Francisco 6, California
In Canada: Shell Oil Company of Canada, Limited,
505 University Avenue.....Toronto 2, Ontario

SHELL

GENERAL TIRES

are NYGEN-BUILT to keep your units on the go . . . anywhere . . . anytime

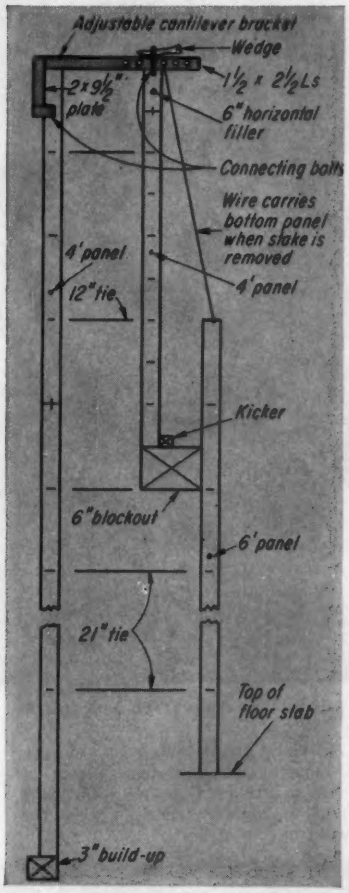
The toughest jobs on your schedule are the sure-profit jobs when you put tough-built General Off-the-Road Tires to work. Thanks to General's own Nygen® cord construction, you're sure of maximum protection against all in-the-field cut, bruise and snag damage. What's more, General's power-drive tread assures full-time traction and flotation whatever the going. Result: less downtime for more profit on every job. Prove it to yourself soon! Why not now?

THE GENERAL TIRE & RUBBER CO. • AKRON 9, OHIO

JOB TALK . . . *continued from page 22*

Instead, the contractor, J. Rich Steers Inc., cut away the damaged concrete of the pile caps, tie beams, and columns. Then he covered the exposed surfaces with a compound made up of epoxy and polysulfide liquid rubber, the latter ingredient manufactured by Thiokol Chemical Co. An unusual property of this material is that it will bond to wet concrete. After spraying on the compound, crews poured concrete to restore the damaged members to their original strengh.

Cantilever Bracket Holds Prefab Forms



To pour floor and walls of a swimming pool monolithically, Knowlton Construction Co. of Bellefontaine, Ohio, had to hang the inner wall forms because they could not be supported from the bottom. For this, an adjustable bracket cantilevered inward from the outer wall forms did the trick.

Instead of using job-built forms for the pool at Ontario, Ohio, Knowlton made use of some of the more than 30,000 sq ft of Symons prefab panels that they had at hand for other work. Except for the brackets the system called for conventional connecting hardware.

The brackets were set at 4-ft intervals. They consisted of a pair of 1½x2½x24-in. angles separated by a 5/16-in.-thick steel slug. An arm made up of a 2x9½-in. steel plate jutting from the outer end of the bracket anchored it to the outside forms. At the lower end of this arm, a 2x3¾-in. plate with a horizontal slot held a connecting bolt running through a hole in the steel frame of the outer panels.

At the other end of the bracket, a connecting bolt held in place between the two angles by a wedge held as much as a 10-ft height of forms.

At one end of the pool a 9-in. ledge was formed in the wall by suspending a 4-ft panel at the top inside a 6-ft panel held temporarily at the bottom by stakes. When the stakes were removed as the bottom slab pour reached the walls, wire ties connected to the inner end of the cantilever held the lower panels, which were braced every 3 ft to maintain alignment.

Labor savings with the bracket system were spectacular: one man placed all 65 of them in just 1 hr. And stripping of the inside form panels was rapid too. On the same day as the 140-yd monolithic pour, the crew stripped the inside panels and roughened the surface of the wall to receive ceramic tile.

A major advantage of the system over similar welded brackets is that the hanger holding the forms can be positioned anywhere on the cantilever bracket, making it easy to adjust forms for varying wall thicknesses.

Make yourself HEARD ! ... without Screaming your lungs out.

Just speak in a *normal* voice . . . and let your compact, lightweight, "one-piece" Audio HAILER *do the work!* New "TP" (transistor-powered) model *projects* your words . . . *like a harpoon*—in a commanding "beam" . . . to anyone within a *half-mile* radius.

Yet Hailer is completely self-contained . . . NO external connections whatever . . . weighs only 5¾ lbs. . . . and runs on low-cost standard flashlight cells. Coupon below brings full details and price list.

AUDIO HAILER
The original power megaphone, and most widely used "one-piece" portable voice system on earth. Weatherproof finish in two-tone green or fire engine red.

AUDIO TP HAILER® transistor-powered
PORTABLE MEGAPHONE

SUPER-HAILER
To penetrate through severe adverse noise levels . . . new SUPER-Hailer concentrates a 16-watt "sound beam" to pierce the surrounding roar. Mile range in quiet conditions.

AUDIO EQUIPMENT CO., INC.
Port Washington 39, N. Y.

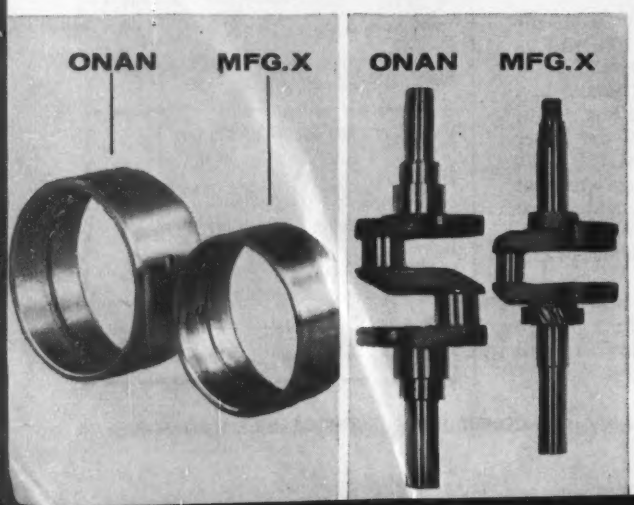
☐ Send color brochure and price list, describing "TP" Audio Hailer.
☐ Send details of "TP" Super-Hailer.

Name.....
Company or Dept.....
St. & No.....
City..... Zone No. (if any)..... State.....

Onan Electric
full power after

Typical Onan torture test—tougher by far than normal usage—proves Onan's ability to deliver on any job.

Generous design assures longer life—Husky Onan has double the bearing area of many equivalent rated engines . . . plus larger, stronger crankshaft to minimize breakdown and to give you longer, trouble-free service between overhauls.



Exacting standards govern manufacture—Years of specialized experience and extensive testing facilities control the quality of Onan Power Plants. Over 1000 different types and sizes of plants are produced by this same, careful method at Onan.

Plant still delivers 12,197 hour test run!

Run equivalent of 487,888 miles... killed and started... tortured, tested, retested... Onan Test Plant #1068 still delivered full-rated power

A grueling endurance test that lasted one year, nine months and 12 days could not stop Onan Test Plant #1068. Development engineers used this production-built unit as a testing laboratory. And after it was all over, it still generated the full rated power promised on the nameplate. Proof that Onan's exacting standards and production testing give you a power plant with long, dependable service built in.

Over 1,700 other endurance tests have been run by Onan development engineers. Here's where every design feature and part had to prove itself before it could become a part of the Onan you buy. In addition, every type and size Onan Plant is tested under all operating conditions which affect its performance.

Hours of running in and testing under load are given every Onan before it is shipped. An independent testing laboratory retests Onan-tested Plants and certifies Onan testing methods—double assurance that every Onan will deliver its full nameplate rating. Only then does an Onan qualify for its Performance Certified Guarantee.

You buy *proven* performance when you buy an Onan Plant. See your Onan representative. You'll find his name in the telephone classified section in every major city, or write direct.

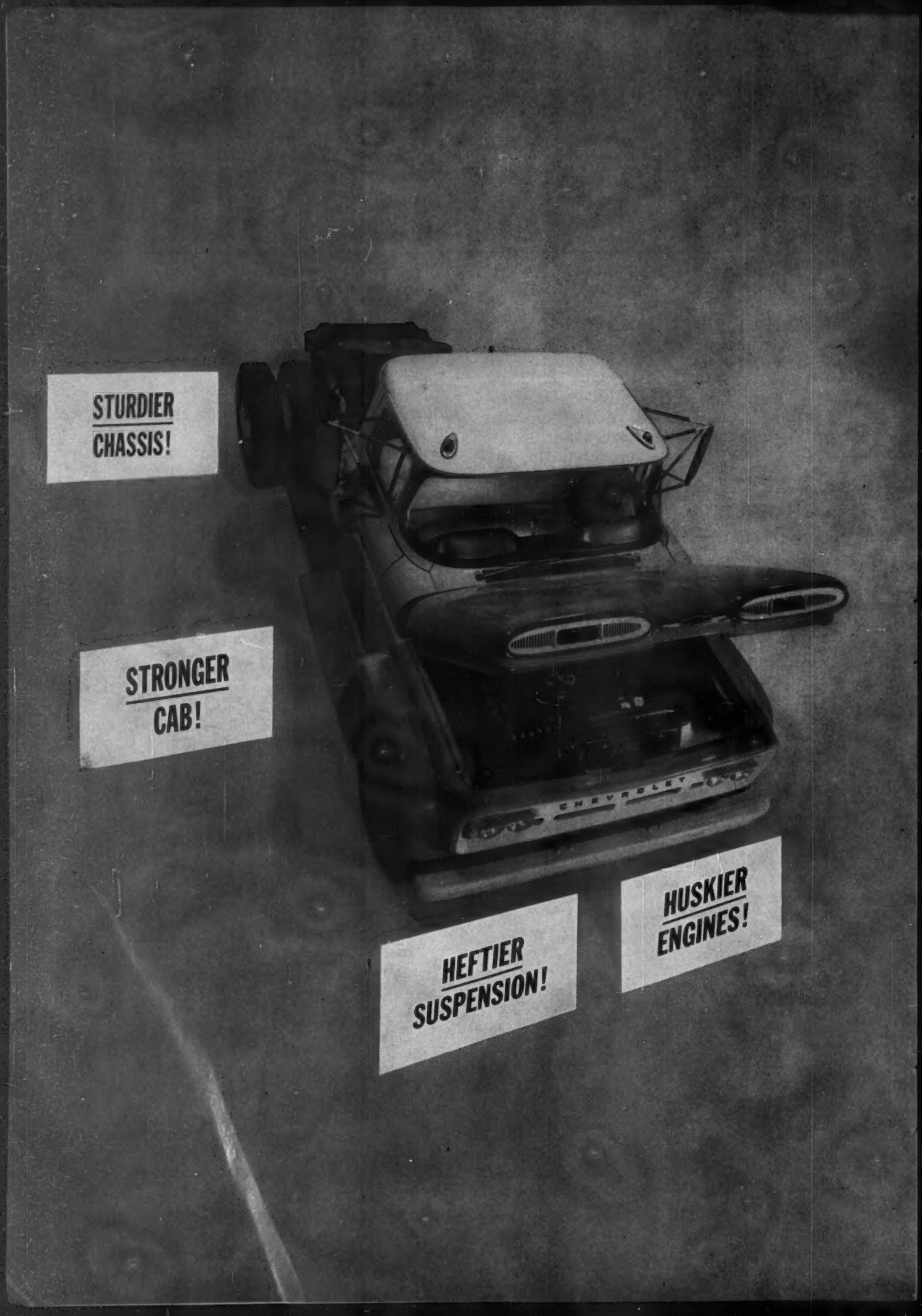
ONLY ONAN GIVES YOU THIS CERTIFICATION

PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.
D. W. ONAN & SONS INC.
Minneapolis 14, Minnesota
Onan

Onan®

World's Leading Builder of Electric Power Plants

D. W. ONAN & SONS INC., 2610 UNIVERSITY AVE. S.E., MINNEAPOLIS 14, MINN.


STURDIER CHASSIS!
STRONGER CAB!
HEFTIER SUSPENSION!
HUSKIER ENGINES!
CHEVROLET

CHEVY'S PUT TOGETHER TO STAY TOGETHER... TO CLAMP DOWN ON COSTS!

NEW STRONGER CAB CONSTRUCTION . . . to add years to the life of your truck. Tough new steel braces reinforce cab underbody, help keep cab tight and solid, provide a sturdy foundation for long cab life. Husky new box-section pillars frame door openings; keep doors in lasting alignment. New roof panel is double walled for extra strength.

NEW STURDIER CHASSIS COMPONENTS . . . steel muscled truck stamina where it counts! New *frames* provide a new box-section rail design that's stronger than ever; torsional stiffness is increased up to 480%! Massive "X" or "K" brace cross-members resist damage from frame twisting like never before. And *brakes* are bigger, for longer brake life and safer stopping. Bigger capacity *suspensions* and *axles* boost load-carrying ability.

TRUCK-BUILT V8's AND 6's . . . famous Chevy engines that know the most about saving money on fuel and maintenance. Brawny forged steel crankshafts assure extra endurance; long-lasting precision bearings minimize wear; full-flow oil filters protect moving parts from harmful dirt. These and many other truck-built engine features provide sure dependability that keeps your maintenance costs *down* for extra thousands of miles.

NEW HEFTIER SUSPENSION protects everything from wear and tear . . . and gives the ride that's revolutionized trucking. Chevy's new independent front suspension system is as *tough* as it is smooth. Rigid control arms, strong alloy steel torsion-bar springs, new low friction steering linkages are engineered to take your toughest runs with strength to spare.

Here are the strongest truck components known . . . assembled lastingly, with care and craftsmanship. It's Chevrolet's way of making sure you get maximum truck life; extra assurance of higher profits because of far fewer maintenance and repair charges.

■ When it comes to putting out a good day's work at least expense, a '60 Chevy truck knuckles under to nobody. Because, as we're showing you here, Chevrolet's building 'em *tough* these days, even tougher than ever before. And that's saying something when you consider how Chevrolet trucks have stood up over the years. Here's a typical example:

160,000 miles on a truck-busting job—and still going strong! The strength and stamina of this Chevy heavyweight has paid off handsomely for Emil Horwatich, Pewaukee, Wisconsin, gravel hauler. This tandem axle Chevy with Workmaster V8 has logged 160,000 miles in the toughest kind of service: hauling maximum loads about 2,200 miles a week, slogging over off-the-road terrain much of the time. "This baby just won't quit," Mr. Horwatich says. "She's a real money saver."

That kind of performance has been Chevy's stock-in-trade for years; and the '60's are designed to put out even more of it. Next time you're in the area, drop by your Chevrolet dealer's. Find out for yourself why more truckers than ever before are getting more work and earnings out of Chevrolet trucks. And make sure you *test drive* a '60 Chevy. You'll wonder how you've managed without one! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

1960 CHEVROLET STURDI-BILT TRUCKS CHEVROLET

WIN MORE STEEL SETTING BIDS!

put the EARNING POWER of a UNIT on your *lift* jobs

This 20 ton UNIT Model 1520T truck crane is setting steel for a power line atop Mt. Frances in Utah.

How many steel erection jobs like this have you lost because of the wrong type of equipment? To win more contracts of this nature you need a truck crane that can move in fast, yet have the reach and power to handle heavy beams at maximum heights.

UNIT TRUCK CRANES offer *true* mobility — road speeds up to 42 MPH — power and traction to meet the roughest off-the-road conditions. Power flows in a direct line to the tandem rear axles — maintains balance and uniform braking action on all rear wheels.

UNIT TRUCK CRANES put a wide range of power, plus precise control at your fingertips. No other cranes have a one-piece, cast gear case. This unique feature gives you perfect, compact machinery alignment for the most efficient performance. Double disc clutches provide the smoothest operation — are completely interchangeable. New oversize, ventilated brakes give you precise, accurate control for spotting loads. Independent boom hoist permits power raising and controlled lowering of boom at high speeds.

UNIT TRUCK CRANES are easy to operate and maintain. The roomy, Full Vision cab gives you an unrestricted, 360° view; has ample head room and large, super-safe, heat tempered glass windows. Sliding side panels and wide hood covers give spacious access to the crane motor and clutches.

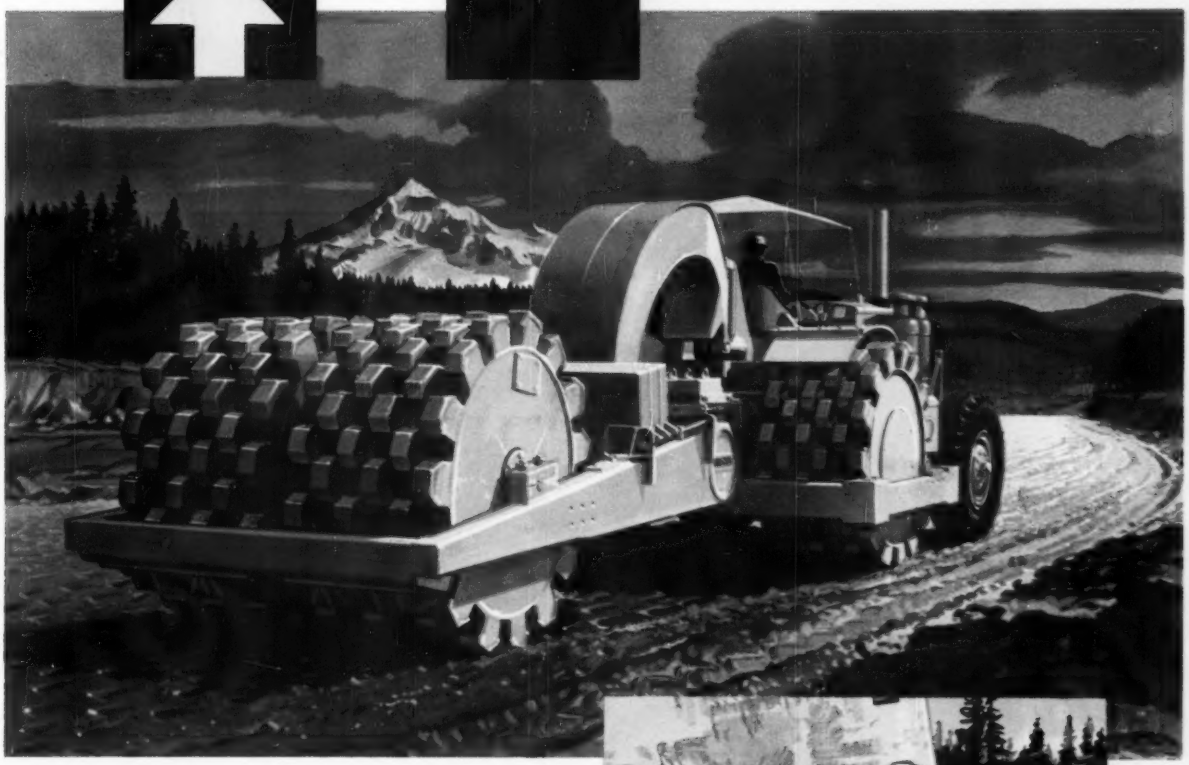
UNIT TRUCK CRANES are built in five size ranges — 10, 15, 20, 30, and 35-40 tons — to handle most any lift job. Convertibility to all excavator applications brings you a plus value. Your UNIT dealer has full information on every model — and the famous UNIT crawler-mounted machines, too. Call him soon.

SHOVELS ½ to ¾ YDS.
HOES ½ to ¾ YDS.
CRANES 5½ to 40 TONS
DRAGLINES ½ to ¾ YDS.

UNIT CRANE & SHOVEL CORP.
6305 W. Burnham St.
Milwaukee, Wisconsin

HYSTER

DW20A TAMPING COMPACTER

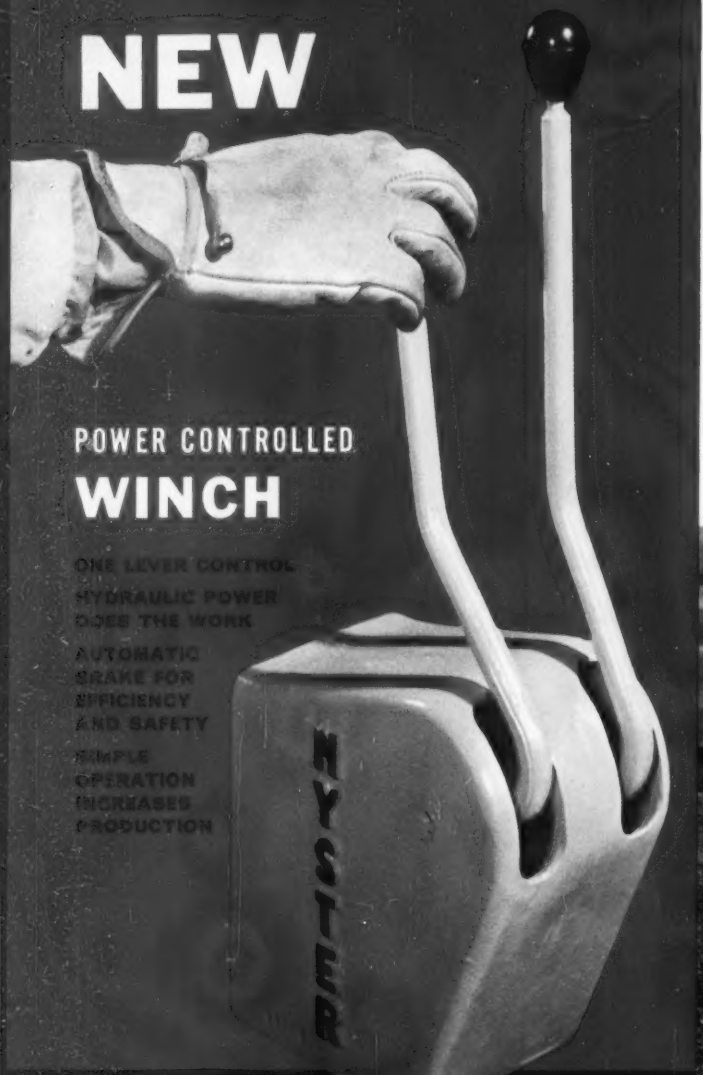


The competitive edge for contractors...

HYSTER has it!

POWER CONTROLLED TOWING WINCH

NEW



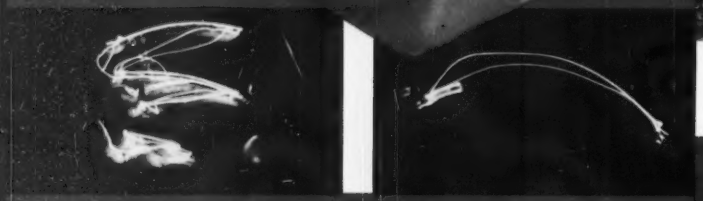
POWER CONTROLLED WINCH

ONE LEVER CONTROL

HYDRAULIC POWER DOES THE WORK

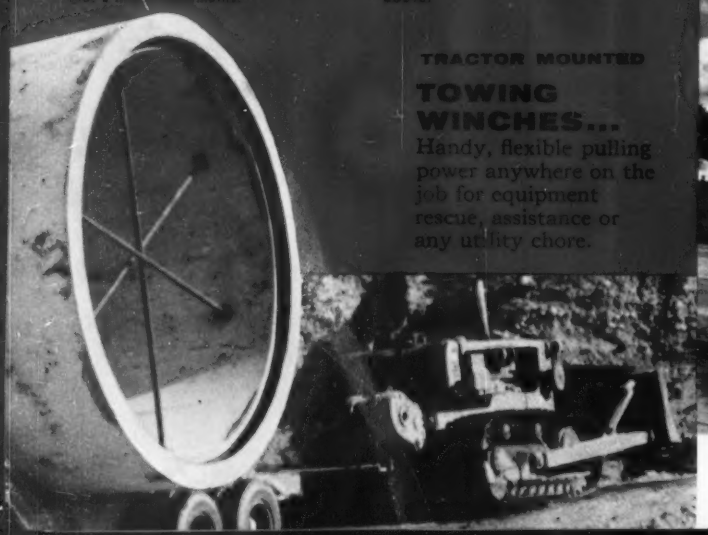
AUTOMATIC BRAKE FOR EFFICIENCY AND SAFETY

SIMPLE OPERATION INCREASES PRODUCTION



Complex motions required to operate conventional mechanical controls are shown by light trace of operator's hand movements.

Simple hand movements required to operate Power Controlled Winch are illustrated by light trace pattern above.



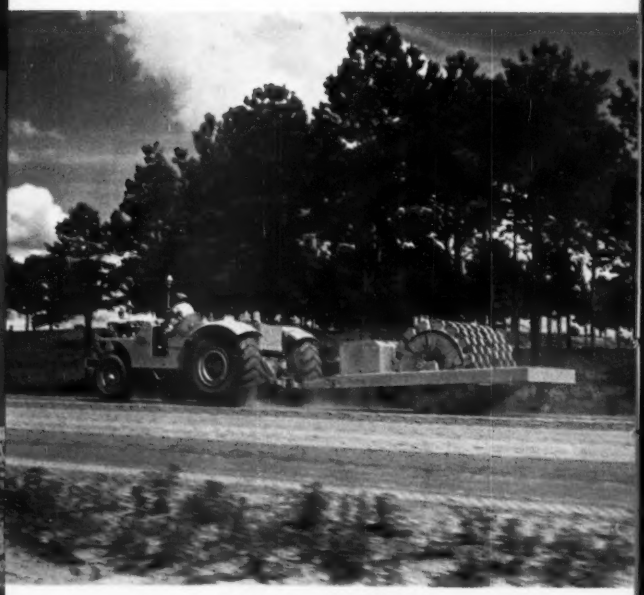
TRACTOR MOUNTED

TOWING WINCHES...

Handy, flexible pulling power anywhere on the job for equipment rescue, assistance or any utility chore.

COMPACTION COSTS AS LOW AS 3¢ PER YARD with HYSTER HIGH SPEED COMPACTERS

DW20A Tamping Compacter rolls highway embankment.



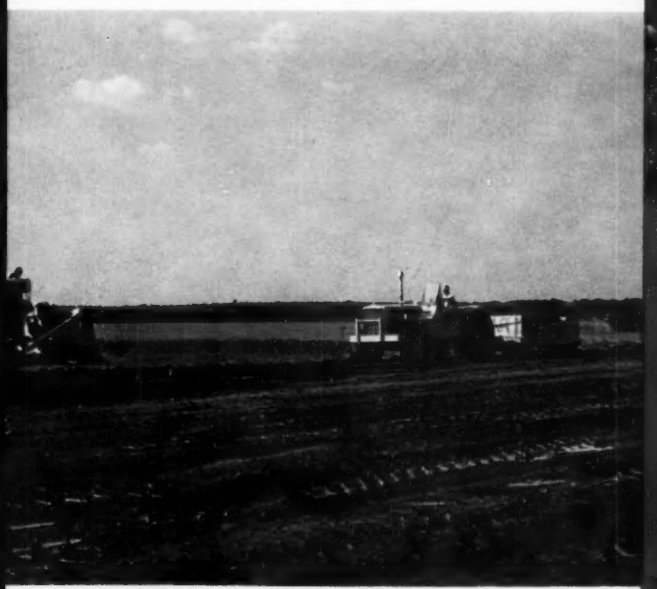
Model D Tamping Roller compacts base course.

- **SPEED UP THE WHOLE JOB**
- **GET DENSITY AT LOWEST COST**
- **SELECT THE WHEEL TO MATCH THE SOIL**

Contractors using Hyster High Speed Compacters with either "GRID" or Tamping wheels can depend on the high production needed to bid safely at competitive figures.

"GRID" wheel also crushes pit-run rock at lowest cost.

Model D "Grid" Roller crushes pit-run river rock.



Model D "Grid" Roller compacts highway embankment.

VERSATILE, HIGHLY-MOBILE TRACTOR-MOUNTED EXCAVATORS

HYSTAWAY....Highly mobile excavator-crane for all utility, trenching, excavating, material handling. Front-end options: Shovel, Backhoe, Dragline, Clamshell, Crane.

HYDRAULIC BACKHOE....Versatile bulldozer-backhoe combination provides high mobility in a wide variety of light excavating jobs.

HYSTER

HYSTER COMPANY
TRACTOR EQUIPMENT DIVISION
P. O. Box 328 Peoria, Illinois

HYSTER, HYSTAWAY and "GRID" are trademarks of Hyster Company.

US RUBBER CONVEYOR BELTS

View of plant

"U. S." Belt conveying limestone rock

Console board from which the entire 10 "U. S." Belts of Quarry System are controlled

Lehigh Portland's Union Bridge plant Highly Conveyorized

This immense plant in Maryland has a capacity of 3-million barrels per year. To feed its huge, ever-hungry machinery, the crushed limestone, sandstone and shale are carried on an automatic conveying system, with rubber belting made by "U. S.".

The entire system is so trouble-free that one operator (plus an oiler-helper) controls a series of 10 of the "U.S." Belts from console board at the quarry.

The main belt in the system is a 5-ply CX U. S. Matchless;® 3560' long on 1780' centers, 36" wide.

It carries 600 tons of raw limestone per hour, extends from the quarry to a transfer belt which runs to the storage building.

Coal and gypsum are brought nearly 500 feet to storage by one of the belts in another conveyor system. Being separate from the conveyor handling limestone, either gypsum or coal can be conveyed to storage at any time.

Massive as this Lehigh plant is, provision for expansion has been designed into the conveyor systems. The superior troughing and stamina of "U. S." Belts enable them to handle greater loads if capacity is increased.

The reliability of "U. S." Belts demonstrated in this plant is one reason why United States Rubber is the world's largest manufacturer of conveyor belts.

• • •

When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER

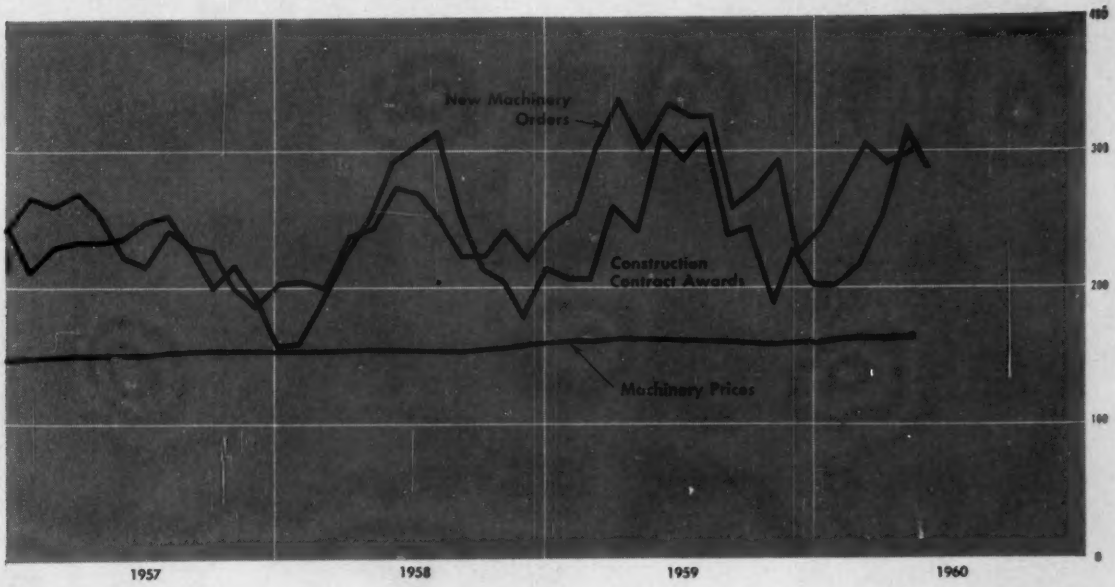
Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

Trends in the Machinery Market...



Price Index

	MAY 1960	MONTH AGO	YEAR AGO	% CHANGE 1959-1960
All Types of Equipment	175.2	174.7	171.9	+ 1.9
Cranes; Draglines, Shovels	**173.2**	**172.5**	**168.4**	**+ 2.8**
Shovel, ½ cu yd	167.9	167.7	163.3	+ 2.8
Shovel, ¾ cu yd	175.4	175.7	172.5	+ 1.6
Shovel, 1-1½ cu yd	188.2	188.6	180.5	+ 4.2
Shovel, 2-2½ cu yd	170.3	166.4	162.1	+ 5.0
Shovel, 3-3½ cu yd	167.8	167.8	167.8	0
Shovel, 6 cu yd	195.0	195.0	188.2	+ 3.6
Crane, truck mounted	168.2	168.2	165.7	+ 1.5
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	162.9	162.9	157.5	+ 3.4
Bucket, dragline	169.3	169.3	169.3	0
Scrapers and Graders	**166.2**	**166.2**	**165.7**	**+ 0.3**
Scraper, 4 Wheel, 8-10.5 cu yd	155.0	155.0	155.0	0
Scraper, 4 Wheel, 12-15 cu yd	156.8	156.8	156.8	0
Scraper, 2 Wheel, 15-19.5 cu yd (a)	126.2	126.2	123.7	+ 2.0
Grader, heavy duty	173.1	173.1	172.6	+ 0.3
Grader, light & medium	171.1	171.1	171.1	0
Tractors (non-farm, incl industrial)	**191.7**	**191.2**	**187.8**	**+ 2.0**
Wheel type, off-highway (a)	129.2	129.2	128.2	+ 0.8
Crawler type, 50-74 dhp	200.4	198.8*	191.9	+ 4.4
75-99 dhp	201.2	201.2	196.4	+ 2.4
100-154 dhp	195.3	194.2	191.3	+ 2.0
155-200 dhp	203.3	203.3	201.3	+ 0.9
Machinery, Tractor Mounted	**169.5**	**169.2**	**168.6**	**+ 0.5**
Dozer, cable controlled	154.4	154.4	154.4	0
Dozer, hydraulic controlled	186.6	186.6	186.6	0
Cable power control unit	152.9	152.9	151.4	+ 0.9
Loader, tractor shovel	163.2	162.5	161.5	+ 1.0
Specialized Machinery	**157.8**	**157.8***	**155.1**	**+ 1.7**
Ditcher	150.2	150.2	156.6	— 4.1
Roller, tandem	226.4	226.4	209.8	+ 7.9
Roller, 3 wheel	178.7	178.7	170.2	+ 4.9
Ripper and rooter	156.6	156.6	150.5	+ 4.0
Dewatering pump, 10 M gph	111.5	111.5	110.0	+ 1.3
Dewatering pump, 90 M gph	151.5	151.5	149.5	+ 1.3
Portable Air Compressors	**167.5**	**167.5**	**167.5**	**0**
Contractor's Air Tools	**181.6**	**181.6**	**181.6**	**0**
Mixers, Pavers, Spreaders	**161.8**	**159.8***	**155.8**	**+ 3.8**
Mixer, portable, 11 cu ft	166.8	166.8	164.1	+ 1.6
Mixer, portable, 16 cu ft	172.7	172.7	168.9	+ 2.2
Mixer, truck, 6 cu yd	132.1	135.1	131.1	+ 3.0
Mixer, paving, 34 cu ft	196.7	196.7	192.0	+ 2.4
Concrete finisher & spreader	201.9	201.9	191.5	+ 5.4
Bituminous distributor	126.2	126.2	122.3	+ 3.1
Bituminous spreader	179.4	170.2	170.2	+ 5.4
Bituminous paver	165.6	165.6*	162.6	+ 1.8
Off-Highway Trucks, Wagons (b)	**102.5**	**101.1**	**101.1**	**+ 1.3**
Contractors off-highway truck (b)	100.3	101.1	101.1	— 0.8
Trailer dump wagon (b)	106.7	101.4	101.4	+ 5.2

● (a) January, 1955=100 ● (b) January, 1958=100 *Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49=100

Equipment Sales To Overcome Early Lag

The New Orders Index for construction and mining machinery rose to 300, 2% above March but 4% off the April record set in '59 (*see chart above*).

While April orders held high for the third consecutive month, they were also down from last year's booming rate for the second month in a row. Thus the four-month average in '60 lags 2% behind last year's January-April average. The New Orders Index is computed by the McGraw-Hill Economics Dept. from reports by a sample of the equipment manufacturing industry. It is based on average monthly value of orders in 1949 as 100.

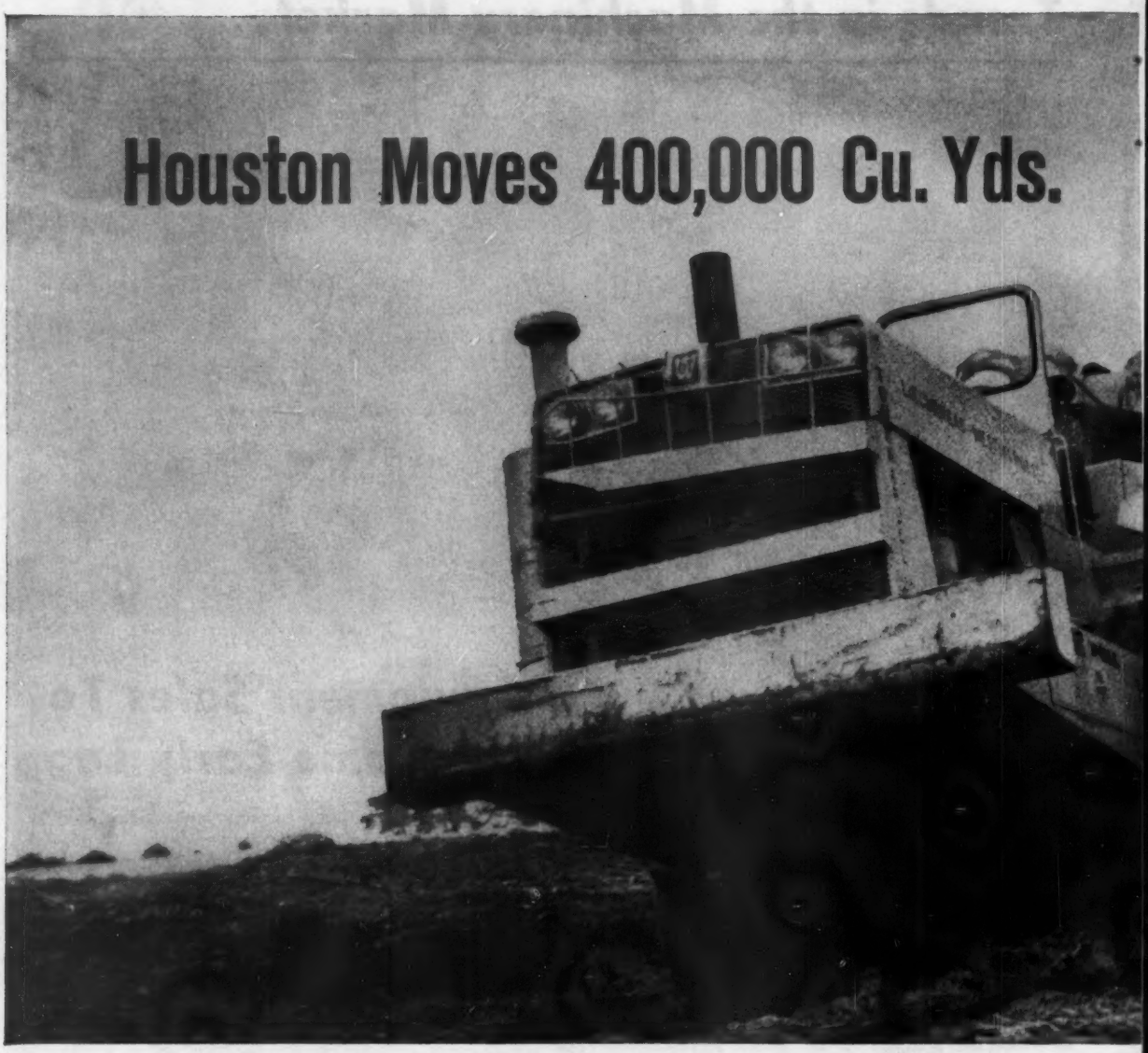
Though this year's pace lags a bit behind early 1959, it is slightly better than 1959's 12-month average (293 on the index scale). Moreover, orders should pull ahead of 1959 in the second half because contractors' new business is trending up.

July-December construction contract awards are expected to top the first half and exceed by a wide margin the second half of '59. Equipment orders, which follow the construction contract trend closely, should wind up 1960 5% or more above 1959.

In fact, the record rate of contracts reported for April-May by *Construction Methods* indicates that new orders placed with equipment manufacturers in May and June may come pretty close to last year's peak pace.

CM&E's Construction Contract Index declined in May to 287 from April's very high 320, based on 1949 = 100. But the April-May average is 7% above the record for this period set in the 1956 boom, and it's 9% more than a year ago. The much faster pace of awards in the last two months accounts for all of the 4% gain, 1959-60, reported to date.

Houston Moves 400,000 Cu. Yds.



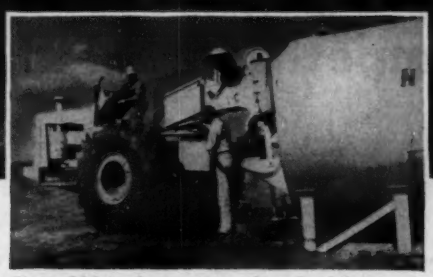
Equipment Performance Credited to

Houston Construction is a young organization in the Shreveport, La. area and the job was an important one to them. The company received a major portion of the work on what is called the Hern St. Extension and Blanchard Road job on the edge of Shreveport. Houston had the earthwork, clearing, grubbing and fencing contract. Earthmoving was the largest part of the job since some 400,000 cubic yards were involved.

One factor that put a strain on the equipment was the long hauling cycle. Eighty per cent of the hauls were two to six miles round trip. Houston's four big earth-movers were running full tilt night and day all summer, picking up loads and roaring across the countryside to empty them. Temperatures hit well over 100°. With such heat and the long, rough hauls, Houston's earth-movers worked under rugged conditions.

Mr. Houston Free, president of Houston Construction stated, "We picked Cities Service as a supplier because of the excellent service they offered. We picked Cities Service C-500 oil for our heavy equipment because we could ill afford any down-time on these machines and we wanted the best lubricant available. The oil proved itself on this job and the services of the Cities Service

on Long Haul Cycle



Two skid tanks were equipped with pumps driven by small gasolene engines to allow Houston to fuel equipment quickly.

Neil Carmony, Cities Service Lubrication Engineer, conferred frequently with Houston supervisors at the job site.

Cities Service C-500 Oil

Lubrication Engineer have been very valuable."

Using the best lubricant available is certainly a small investment in safeguarding your valuable equipment. Cities Service C-500 is designed to provide extended service life in diesel engines even when operating on high sulphur fuels.

For information on the "C" Series oils write: Cities Service Oil Co., Sixty Wall Tower, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

How 9,984 Contractors with $100,000 or More in Contracts Divided 18,477 Projects ($15.2 Billion) in 1959.

Reported by Construction Methods

TYPE OF WORK	Contractors 1959	Contractors % Chg. fr '58	Number of Projects 1959	Number of Projects % Chg. fr '58	Contract Value (millions) 1959	Contract Value (millions) % Chg. fr '58
TOTAL—ALL TYPES	**9,984**	**— 1**	**18,477**	**— 8**	**$15,219**	**+ 6**
TOTAL OTHER THAN BUILDING	6,048	— 5	12,030	—15	6,466	—13
Waterworks	678	+16	947	+22	347	+26
Sewerage	1,190	+ 5	1,630	+ 9	594	+ 8
Bridges	811	—28	1,149	—26	533	—16
Highways and streets	2,803	—11	5,330	—25	2,570	—25
Earthwork, dams, waterways	765	+12	949	+15	816	—15
Airports	914	—12	1,089	—21	932	— 1
Unclassified	857	—16	936	—11	674	+ 2
Federal (included above)	1,420	—13	1,838	—16	1,520	+ 0.1
TOTAL BUILDING	3,936	+ 7	6,447	+10	8,753	+27
Industrial	1,481	+41	2,082	+56	2,971	+86
Mass housing, commercial, public	2,990	— 2	4,365	— 4	5,782	+10
Housing	907	+ 7	1,199	+13	1,894	+17
Schools	995	—13	1,326	—15	1,243	— 5
Offices, private	189	—17	220	—24	508	—21
Offices, public	99	—15	106	—17	179	—19
Shopping centers, stores	275	+43	333	+ 4	484	+95
Public industrial, military and atomic energy	243	—31	287	—34	429	+10
Other buildings: private	457	— 1	504	— 4	549	+20
Other buildings: public	353	+30	390	+29	496	+55
Federal (included above)	370	—23	371	—25	856	— 1

More Work, But More Competition For It

CONTRACTORS taking on $100,000 or more in heavy construction contracts last year had 6% greater dollar volume than in 1958. These 9,984 contractors took on 18,477 contracts valued at slightly more than $15.2 billion, according to Construction Methods' analysis of awards reported by it in 1959.

But competition increased last year. Despite the gain in total dollars of new work coming up for bids, the number of awards signed up by these contractors fell 8% under the 1958 count.

One result was that the total number of contractors in this group dipped by 1% (*CM&E*, June, p 46). Another result was that some of the contractors who were in the big volume brackets in '58 slipped back to a smaller size bracket in '59 because their new business was off. This is evident in the 2% decline in the number of contractors with $1 million or more in 1959 contracts, compared with 1958, and the 1% dip in the $500,000-$1,000,000 bracket. But in the smaller $100,000-$500,000 bracket, there were slightly more firms in 1959 than in 1958.

The smaller number of contractors in the larger volume groups reflects last year's cutback in available interstate high-

CONTRACTORS RANKED BY VOLUME AT NEW CONSTRUCTION CONTRACTS IN 1959

Type of Work	Firms with $1,000,000 or More in Construction Contracts: Number of Contractors 1959	% Chg. fr '58	Number of Projects 1959	% Chg. fr '58	Contract Value (millions) 1959	% Chg. fr '58	Firms with $500,000–$1,000,000 in Construction Contracts: Number of Contractors 1959	% Chg. fr '58	Number of Projects 1959	% Chg. fr '58	Contract Value (millions) 1959	% Chg. fr '58	Firms with $100,000–$500,000 in Construction Contracts: Number of Contractors 1959	% Chg. fr '58	Number of Projects 1959	% Chg. fr '58	Contract Value (millions) 1959	% Chg. fr '58
TOTAL – ALL TYPES	3,489	– 2	9,679	–12	$12,834	+ 8	2,029	– 1	3,447	– 8	1,299	– 2	4,466	+ 0.4	5,351	+ 0.4	$1,086	+ 1
OTHER THAN BUILDING	1,776	–13	5,750	–24	5,079	–16	1,104	– 6	2,291	–14	677	– 3	3,168	+ 0.2	3,989	– 0.3	710	+ 3
Waterworks	246	+29	386	+20	242	+23	130	+19	191	+23	49	+41	302	+ 5	370	+24	57	+29
Sewerage	357	– 5	612	+ 3	362	+ 1	237	+17	356	+15	111	+22	596	+ 7	662	+12	121	–18
Bridges	394	–40	621	–31	414	–18	148	–12	231	–21	65	–10	269	–10	297	–21	54	–10
Highways and streets	1,032	–20	2,796	–34	2,027	–27	536	–15	1,019	–25	277	–22	1,235	+ 0.3	1,515	– 1	265	0
Earthwork, dams, waterways	370	+ 6	469	+12	713	–19	124	+22	151	+ 7	51	+31	271	+16	329	+22	52	+26
Airports	429	– 9	545	–24	790	+ 1	145	–12	191	–10	70	–11	340	–16	353	–20	72	–14
Unclassified	290	–23	321	–14	531	+ 6	122	–17	152	–16	54	–14	445	–10	463	– 6	89	– 3
Federal (included above)	603	– 9	867	–17	1,279	+ 2	246	– 1	328	+ 3	119	+ 8	571	–21	643	–21	122	–17
BUILDING	1,713	+14	3,929	+14	7,755	+31	925	+ 6	1,156	+ 4	622	+ 6	1,298	+ 1	1,362	+ 3	376	– 3
Industrial	616	+38	1,092	+62	2,745	+90	207	+19	276	+35	93	+37	658	+53	714	+56	133	+58
Mass housing, commercial and public	1,535	+11	2,837	+ 2	5,010	+12	811	+ 3	880	– 3	529	+ 2	644	–27	648	–25	243	–20
Housing	507	+10	775	+16	1,667	+17	237	+22	253	+23	158	+25	163	–16	171	– 9	69	– 3
Schools	558	– 1	873	– 9	988	– 1	290	– 6	308	– 6	192	– 2	147	–45	145	–46	63	–41
Offices, private	149	+ 1	182	–11	488	–19	30	–36	25	–55	15	–48	10	–70	13	–57	5	–57
Offices, public	56	–29	62	–30	157	–23	26	+44	27	+42	16	+56	17	–11	17	–15	7	–13
Shopping centers, stores	187	+70	240	+47	435	+56	55	+12	60	+13	35	+18	33	0	33	+ 3	14	+14
Public industrial, military and atomic energy	102	–24	135	–29	386	+20	40	–32	41	–43	19	–40	101	–37	111	–35	24	–39
Other building: private	280	+ 9	330	+ 4	464	+28	89	–11	89	–18	48	–19	88	–15	85	–13	37	+ 3
Other building: public	204	+30	240	+33	425	+62	78	+39	77	+20	46	+23	71	+20	73	+24	24	+32
Federal (included above)	223	–24	222	–24	804	+ 1	62	+ 7	54	–24	30	–16	85	–33	95	–26	21	–33

SPECIAL REPORT TO CATERPILLAR OWNERS:

CAT CATERPILLAR

Parts you can trust
...cost less per hour

Converting to Lifetime Lubricated Track Rollers costs less than you think

Lifetime Lubricated Roller Groups, including seals, shafts and end collars, *cost only a little more* than ordinary Bellows Seal Rollers without end collars. But this small expense of *initial* installation rapidly disappears through noticeably lower owning and operating costs.

Based on savings from seal replacement alone, Lifetime Lubricated Rollers soon make up the difference. The metal rings of the Floating Ring Seal can be used over and over again. Take a 14-roller D8. At every roller rebuild, you probably have to buy 28 bellows seals @ $3.97* each or a total of $111.16. Compare this with the rubber "O" rings costing a total of only $45.08*. You save $66.08 in seal replacement costs every time you rebuild or replace. Similar savings are available on all models. And, replacement Lifetime Lubricated Roller and shaft assemblies without end collars are priced below those of Cat Bellows Seal Rollers.

But your savings don't end here! Here are other benefits you get from Lifetime Lubricated Track Rollers:

1. Longer Lived Roller Shells and Component Parts. The Lifetime Lubricated Roller is much stronger and has more metal in the wear zones, specially hardened for extra resistance to wear. And bushings, bearings and shafts are larger and stronger and will last longer. These components are *always* bathed in *clean,* heat-dissipating oil (not grease). Dirt just can't get in to accelerate wear—oil can't get out, thanks to the patented Floating Ring Seal. This means you won't be buying as many replacement bushings and shafts at rebuild or roller replacement time.

2. Maintenance Is Eliminated. Lifetime Lubricated Rollers need no servicing until they're finally rebuilt. You don't have to spend any time nor money for lubrication during the rollers' lives.

3. Easier Installation. Snap-on rings hold seals and end collars in place *before* mounting. End collar bolt holes line up easily with track roller frame holes at installation. Your tractors will be on the go much sooner.

See your Caterpillar Dealer. He'll give you the complete facts on the economy of investing in Lifetime Lubricated Rollers... for *all* Caterpillar track-type equipment.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

*Suggested consumer prices for these Caterpillar parts

SERVICE TIP: Lifetime Lubricated Rollers need no servicing. But when rebuild time finally comes, keep metal rings matched in original pairs.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

AVAILABLE IN ¾" AND 1¼" CAPACITIES. Shown at right is Model 18-B-7 with ¾" rated capacity. Write for Bulletin 18-11.

NEW

GARDNER-DENVER IMPACT WRENCHES

Model 18-B-9 impact wrench with 1¼" rated capacity. Write for Bulletin 18-15.

hit harder...last longer

Here are two new lightweight, easy-to-use impact wrenches that hit harder—yet don't wear themselves out. They're the result of intensive Gardner-Denver engineering to develop a powerful, long-lasting impact mechanism. The combination of a fast-accelerating air motor and a new, patented clutch mechanism assures positive starts, efficient impacting and lowest maintenance.

And look at these big advantages: light weight—lowest weight possible consistent with high-power output . . . easily disassembled for service . . . no torque reaction . . . reversing lever protected from accidental engagement but readily accessible when needed.

For *your* production or maintenance jobs, get the complete story on the new Gardner-Denver impact wrenches. Contact your nearby Gardner-Denver air tool specialist or write for bulletins.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

way and bridge contracts. Competition for the reduced amount of highway and bridge jobs was so great that 11% fewer "$100,-000-Up" contractors bid successfully in the highway market and 28% fewer won new bridge contracts.

The '58-'59 trend was distinctly different, however, as between contractors doing building and those handling work other than building. There were 10% more building projects and a 27% jump in dollar value of building awards. By contrast, firms doing heavy construction other than building had 15% fewer projects and 13% less dollar volume than 1958's record.

The uptrend in building awards and the downtrend in other than building explain why there was a record number of contractors winning new building contracts in 1959, while the number doing other than building declined 5%.

Big gains in industrial building, shopping centers and stores, public buildings (other than schools, offices, industrial, and housing) and private mass housing accounted for all of the rise in the building market. While there were more contractors taking on each of these types, the number increased much less than dollar volume. (See table. Note correction to the June table's total for 1958 and '58-'59 change in contractors taking on mass housing.)

Waterworks and sewerage contracts increased in number as well as dollar volume, and these increases led to more contractors taking on these types of work. Despite a drop in earthwork-dams-waterways dollar volume, there were more projects and more contractors. But sharp cuts in available new highway, bridge, and airport jobs brought corresponding reductions in the number of firms getting new work of these types.

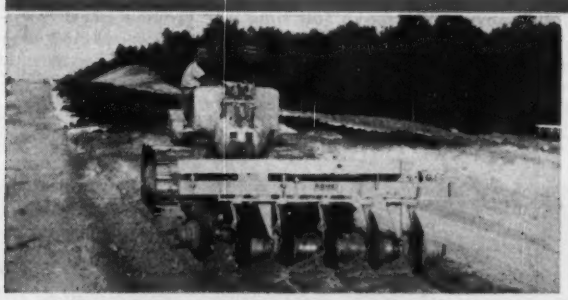
"Million-Dollar" contractors racked up a total of $12.8 billion in 1959 contracts reported by *Construction Methods*. Despite a 12% decline in number of contracts, dollar value of their awards jumped 8% over 1958.

All of this gain in '59 new business was by building contractors. They signed up a whopping 31% increase in awards, led by a 90% gain in industrial building and a 47% rise in contracts for new shopping center and store construction. By contrast, sharp declines in interstate highway and bridge volume cut total new business of other-than-building contractors in the "$1 Million-Up" bracket 16% below 1958.

Contractors doing $500,000 to $1 million had 2% less dollar volume in '59 than in '58. They, too, had less other-than-building volume but more building awards. Increases of 37% in industrial plant contract volume and 25% in mass housing accounted for much of their over-all 6% gain

continued on page 49

BUILD HIGHWAYS THE ROME WAY



MIXING AND BLENDING. Rome Model TRCH 10-36 Hinge Type Offset Disk Plowing Harrow cuts up to 13" deep for low cost mixing, blending, bonding lifts.

AERATING. Rome Model TRH 20-30 Hinge Type Offset weighs over 9,000 lbs.—heavy duty construction for less maintenance, longer life.

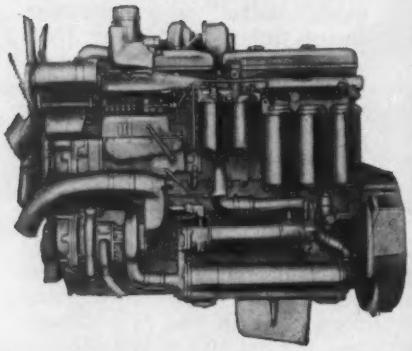
PULVERIZING AND LEVELING. Rome Model TCW 40-24 Wheel Type Offset cuts 15' wide—has rubber tire transport for easy turns, transport, accurate depth control.

TOUGH, VERSATILE AND MONEY SAVING. Rome Disk Plowing Harrows are available in many sizes and types. For aerating, mixing, scarifying, pulverizing—there's a ROME for your job, your equipment. See your Rome-Caterpillar dealer.

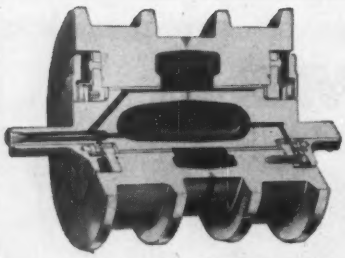
ROME®

ROME PLOW COMPANY
Cedartown, Georgia

Three new International TD-25's of contractor V. E. Posey's fleet team up preparing home sites from a mountainside...near San Diego, California. One "25" operator comments: "The power is there, but big engine 'sound and fury' are just about gone!"



Big power "plus" of the new TD-25 is the new direct-start, 6-cylinder turbocharged International DT-817 diesel engine. Tri-metal crankshaft bearings; valve rotators; dry-type air cleaner; externally-mounted, gear-driven oil and water pumps—all are typical DT-817 long-life, high-output features!



How you get full-

Thick-shelled International Dura-Rollers have king-sized lube reservoirs, positive sealing, and exclusive relief-passage protection from over-lubrication. These *minimum maintenance* track rollers give you practical 1,000-hour lubrication intervals!

Keep full loads on the move full time with exclusive Planet Power-steering. Full power on both tracks, full time, is the answer! And Hi-Lo on-the-go power-shifting lets you match power to condition, instantly, to keep loads "on the move"—and increase speed where practical! This "25" belongs to Berke Moore Co., Inc., Boston expressway contractor!

load turns...full-speed cycles

with proved TD-25 standard equipment!

As standard equipment at no extra cost, the new 230-hp TD-25 gives you the International® proved control combination that has been outproducing king-sized clutch-steered crawlers for years!

You get combined Planet Power-steering and Hi-Lo on-the-go, power-shifting exclusively in the new International TD-25. And you get this basic, built-in design advantage in your choice of torque-converter or synchromesh model!

With this and all its other big advantages, the TD-25 can outearn other big rigs up to 50%—on push-loading, bulldozing, or pulling big drawbar tools such as a shale-shattering ripper!

No "dead-track drag" or "gear-shift lag"!

Planet Power-steering gives you full-time "live" power and traction on both tracks, to make full-load turns—and to eliminate load-limiting "dead-track drag." And Hi-Lo on-the-go power-shifting instantly matches power to conditions to end load-losing "gear-shift lag."

Hi-Lo power-shifting makes the TD-25 the industry's only king-sized 4-speed torque-converter crawler, and the only one with load-matching efficiency-range control. In the synchromesh transmission "25," the Hi-Lo planetary system gives eight speeds forward and reverse. Either model gives you cycle-speeding, up-or-down, on-the-go power-shifting with "finger-tip" ease!

Power-shift and power-steer the new "25" with king-size loads—around curves, upgrade, anywhere. Prove what it means to command full-time, full-load ability to outearn clutch-steered king-sized crawlers, up to 50%—and with standard control equipment! Compare simplified TD-25 design—the only planetary system engineered and located to give you "live track" power steering and on-the-go, up-or-down power shifting! See your International Construction Equipment Distributor for a demonstration!

International® *Construction Equipment*

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

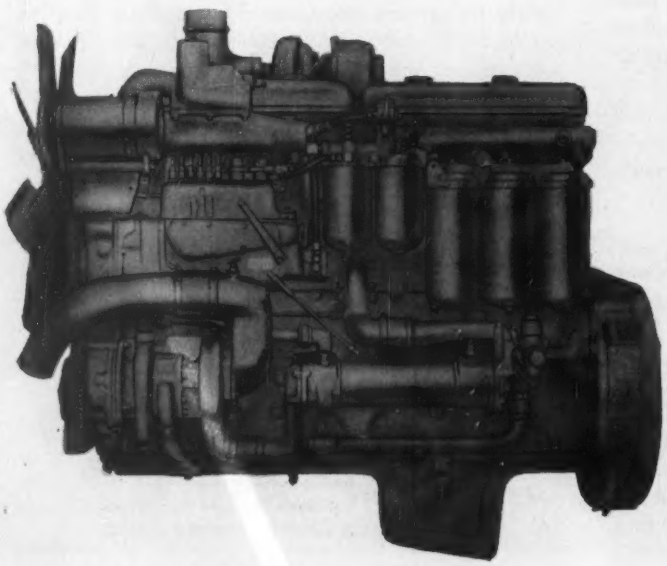
How BRAWN-BACKED Payscraper® features give you stepped up . . . loading

. . . roading

. . . dirt-on-fill capacity!

From power plant to push-block, the 34-cu. yd. International 295 Payscraper gives you an exclusive combination of features that step up dirt-on-fill delivery! Compare quiet, big-capacity DT-817 Payscraper power. Try the advantage of up or down, on-the-go, Payscraper power-shifting that provides load-speeding *automatic* direct-drive lock-ups in second, third, and fourth gears! Measure *extra value features* like safe, effortless power-steering—that leaves "the steering feel in the steering wheel." Note how exclusive torque-cushioning planetary drive axles add dependability to rough-and-tumble earthmoving! See how 122-inch bowl width speeds loading and unloading—adds control ease and stability, loaded or empty. Prove on your job that bonus performance "rides" the Payscraper bowl. Choose the 2-axle "295"; or 3-axle, 34-cu. yd. "495." See your International Construction Equipment Distributor for a demonstration.

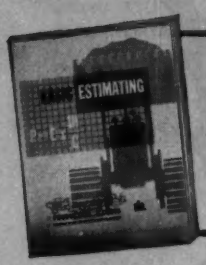
Payscraper power-to-payload punch tops all other rubber-tired rigs—because the fast-slugging, high-torque International DT-817 diesel is the Payscraper power plant! The 375-hp, turbocharged DT-817 gives you direct, push-button starting; all-altitude high-efficiency performance; power for top rim-pull to help speed all steps of the cycle; time-saving "no-lag" control power!



Even "dead" sand comes alive and "boils" fast into the Payscraper bowl. Every detail of Payscraper design aims at speeding the cycle, and *staying available!* The 21-inch diameter steel cross tube provides super load-bearing strength and resistance to impact. Bowl "backbone," draft arms and side reinforcing members all are massive high-strength box-section steel weldments. "X"-member reinforcing maintains perfect push-frame alignment at all times. And the 4-speed, planetary-type, torque-converter power-shift transmission automatically adjusts torque and load to speed — to maintain full capacity!

You steer the 140,000-lb. loaded Payscraper almost as easily as a 3,600-lb. automobile! Payscraper gives the big control advantages of (1) exclusive International rack-and-pinion plus tandem pump steering system; and (2) 3-degree forward spindle pitch that improves scraper balance and prevents "nose downs" in high-speed turns. The 16-adjustment, bump-smothering seat builds operator confidence, too. And reach-easy power brakes, "control tower" vision, and flush deck safety help him deliver full Payscraper capacity, and take advantage of speeds up to 33.5 mph. He commands ample power and traction to pull *directly* out of 90-degree turns, even on soft fills!

The fast, positive-acting Payscraper ejector mechanism is powered by the International PTO-driven Cable Control Unit. One cable drum of this simple planetary system actuates the apron and ejector; the other drum positions the bowl to control spreading action. Apron lifts to a big 94-inch opening. Two ejector-plate pushing members apply dozer-like action to force out the whole 34-cu. yd. load cleanly. Action of six heavy-duty springs, stretched during ejection, positively powers the ejection mechanism's return!



Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, *anywhere!* Yours for the asking from your International Construction Equipment Distributor!

International Harvester Co.,
180 N. Michigan Ave.
Chicago 1, Illinois
A Complete Power Package

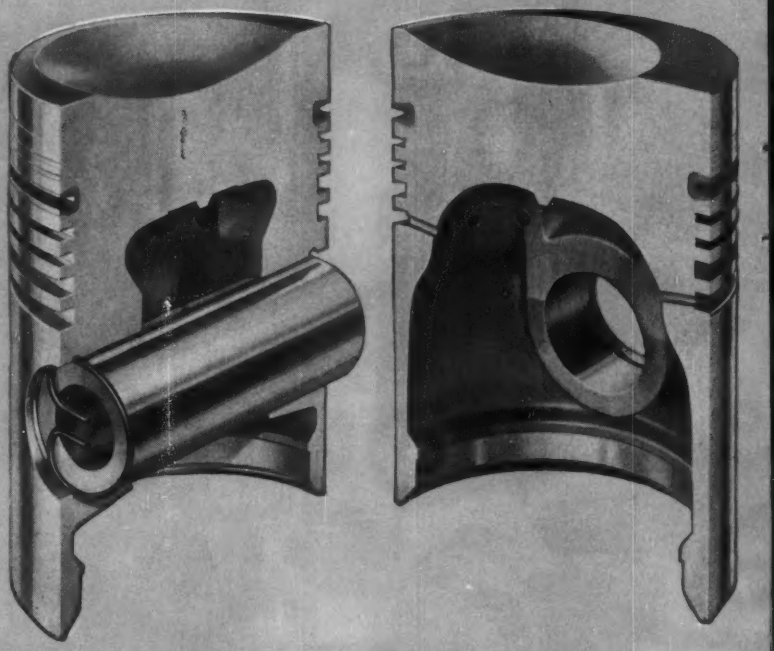
International® Construction Equipment

Buy quality again

Get IH parts exactly like those in your original machine

There's more than fit in the quality-matched parts of your International equipment...Fitness is just as vital! Each and every part is given the special combination of strength, resistance to shock, wear, distortion, and "fatigue" that its special application requires. There's no magic short-cut to building into any part the correct combination of qualities each one needs to do its job. Only in genuine International parts do you get original fit-and-fitness.

Take pistons and sleeves, for instance. Superiority of International pistons begins with design. Correct dish promotes thorough combustion and assures smooth firing. Two oil rings, with exact taper and tension, and three compression rings assure smooth follow-through on the power stroke. Pins are heat-treated inside and out to absorb shock loads. Sleeves are precisely machine-mated to International piston specifications. International's laboratories, proving grounds and manufacturing centers constantly check the rigid specifications and precise engineering standards of all International parts—your guarantee of perfect performance for International power.



International parts and service facilities are always nearby, with a network of 12 parts depots and more than 200 distributor outlets. You get the part you want, when you want it!

IH PARTS

International® Construction Equipment

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. . . continued from page 43

in building awards. However, less highway, bridge, and airport volume trimmed their other-than-building business volume by 8%.

By contrast, those contractors with $100,000-$500,000 in total 1959 contracts chalked up a slight 1% gain over '58 dollar volume. But while they took on 3% more other-than-building work, they suffered a 3% dip in building contracts. Gains in waterworks and earthwork-dams-waterways business, plus a steady volume of highway awards, held their total other-than-building awards above '58. Though they had a 58% increase in plant construction and a 14% rise in shopping centers and stores, a 41% drop in schools was instrumental in pulling down their total building awards volume.

Stiff Competition Forces Dam Prices Down

Stiffer competition for dams, irrigation, and hydro-power construction has pulled costs down this year. The U.S. Bureau of Reclamation's Denver office reports that its April Composite Cost Index for such projects in 17 states and Alaska dropped 2.4%, canceling out the January rise. The latest quarterly index was 4.6% under the October '57-January '58 record.

Because demand dropped off in '59 and '60 for the types of work that BuRec buys, as measured by Construction Methods contracts figures for earthwork-dams-waterways, contractors are evidently trimming their bid prices to compete more successfully for the reduced amount of new work available.

The Bureau reports that the average number of bidders per project rose to a 10-year high of 8.2 for 1959 lettings. This compares with an average of 6.3 for the preceding 10-year period. Low bids on '59 projects were generally well below engineering estimates. For example, low bids were more than 20% under estimates for three of the seven earth dams awarded. This year's indexes show costs dropping for earth dams, concrete dams, canals

NO TARDY BID BONDS UNDER HERE!

When you get your bid bond from The Travelers, you get it *right* . . . and you get it *right away!*

Whether you're negotiating at home or from a thousand miles away, the local Travelers man knows local regulations. He'll use his know-how to move the paper through *quickly* and in exactly the right form.

So why let a tardy bond hold up your chances on a bid when a Travelers man is handy? You can depend on him for *speedy, complete, expert* service. See him before you bid again!

For Bonds, Workmen's Comp and Public Liability insurance, for Builders' Risk and Contractors' Equipment Floaters, for any kind of business insurance you need—talk to your Travelers man. There's one nearby wherever you are.

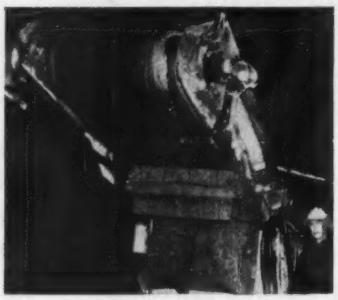
THE TRAVELERS
Insurance Companies HARTFORD 15, CONNECTICUT

"IT'S GOODALL'S SUPER TRIPLE-S. WE'VE FOUND IT TO BE OUR BEST BUY FOR JOBS LIKE THIS!"

"SUPER TRIPLE-S". For conveying bulk materials under most severe operating conditions . . . aggregates, crushed stone and rock up to 10", abrasive ores—wet or dry. Especially suited for long center hauls where tension is high and extreme flexibility required. Built for uninterrupted service—utmost freedom from costly shutdowns for repairs. Tensile strength, friction and other details determined by specific requirements.

"And the Same Holds True for Goodall Mucker Belts!"

"WEAR KING". Developed especially for Mucking Machines in tunnel excavating, and used on most of the largest modern tunnel jobs. Construction provides highest resistance to continuous tension, terrific load impact, small-pulley flexing and ply separation.



Write for catalog describing the complete Goodall Belting line—conveyor, elevator, grader, mucker, hot material, etc.

"If it's GOODALL, it MUST be Good!"

Contact Our Nearest Branch for Details, Prices.

Standard of Quality—Since 1870

HOSE · BELTING · FOOTWEAR · CLOTHING AND OTHER INDUSTRIAL RUBBER PRODUCTS

GOODALL *Rubber Company*

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

BRANCHES AND DISTRIBUTORS THROUGHOUT THE UNITED STATES. IN CANADA: GOODALL RUBBER CO. OF CANADA LTD., TORONTO.

and lateral structures, pumping plants, and hydro-power plants.

BuRec's Composite Cost Index for April '60 was 1.24, based on 1949-51 = 1.0. This is the lowest value in three years.

Building Contractor Failures Rise by 31%

Building contractors continue to find rough going financially in the hot and heavy competition for new work that led some of them to stretch their resources too thin.

Bankruptcies among general building contractors climbed to 406 in the first five months of '60, according to Dun & Bradstreet figures. This topped last year by 31%. Failures of building trades subcontractors total 588, topping last year by 20%.

Low prices and competition for new work are giving larger contractors their share of woe, judging from the steeper rise in failures of contractors with liabilities of $100,000 or more, compared to those with smaller liabilities.

Contractors handling other-than-building work such as highways, bridges, sewerage, and waterworks, fare better this year than last in holding up financially. Seven per cent fewer of these firms have gone to the wall this year; their liabilities are off 8%.

Regionally, construction contractor failures are rising fastest in the South and Middle West. However, the Far West leads in total number of failing contractors and largest amount of liabilities.

1960's Cost Rise To Level off Soon

This year's wage push is lifting construction costs to a new high. But once the 1960 round of construction wage hikes is completed, around August, costs should hold steady for the rest of this year.

The 1960 cost rise is much slower than in recent years. In fact, the total rise expected in 1960 will be the smallest since 1949 when costs dipped for the first and only time in more than two decades, according to the Construction Cost Index of Engineering News-Record (McGraw-Hill). This index is predicted to rise 2.9% in the 12

continued on page 55

All the dry mix leaves the box because of the smooth, dent-free surface of USS "T-1" Steel bottom plates. Extra clean-out men are not needed. Understructure, sides, batch and tail gates are USS COR-TEN Steel for strength and light weight. Truck Body Fabricator: Capital Industries, Inc., Seattle, Washington.

The best combination for performance . . .

Dump truck bodies made of USS "T-1" and COR-TEN Steels

"Pouring 4,100 feet of concrete highway is a good day's work," says Louis Tomaso, pouring superintendent for Northwest Construction Company, Seattle, Washington. "This kind of production takes the best equipment. That's why we are sold on dump boxes made with U. S. Steel's 'T-1' and COR-TEN Steels."

"With 'T-1' Steel in the bottoms and COR-TEN Steel in the sides and gates, we get a clean dump every time," says Mr. Tomaso. "The surface remains smooth and dent-free. None of the mix hangs up in the truck."

Northwest's trucks also double as earth movers and here's where they meet their real test. The maintenance superintendent, Homer Baer, says, "USS 'T-1' Steel is tough enough to take the impact of heavy rocks falling from the shovel and the 3/16-inch bottom plates have never ruptured, stretched or dented."

Less weight—more payload. The combination of USS "T-1" Constructional Alloy Steel and COR-TEN High Strength Steel cuts 1,020 pounds of dead weight from the trucks and allows bigger payloads. "T-1" Steel has a minimum yield strength of 100,000 psi and COR-TEN Steel's yield point is 50,000 psi minimum. Both steels are workable and weldable and offer superior resistance to abrasion and atmospheric corrosion. For more information, write to any district office of United States Steel or to Room 2801, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS, "T-1" and COR-TEN are registered trademarks

This mark tells you a product is made of modern Steel.

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
National Tube—Pittsburgh
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company
United States Steel

USS

More proof that...

AMSCO HELPS YOU MOVE MORE TONS PER DOLLAR

How a large contractor and a crusher manufacturer have cut downtime and increased service life with AMSCO equipment

DAILY "TOOTH REPAIR" ELIMINATED BY SWITCHING TO AMSCO 2-PART TEETH

AT MT. VERNON CONTRACTING CORP.

Mount Vernon Contracting Corp. is a large general contractor doing work throughout the middle Atlantic states. Its present contract is for road construction on the Cross Westchester Expressway, linking the New York State and New England Thruways.

The firm's four power shovels and two backhoes on this job are equipped with Amsco dippers or dipper parts and Amsco Simplex* 2-Part Teeth. Reason: competitive teeth previously used required daily welding build-up to maintain their points. Now, since switching to the Amsco Simplex, teeth are changed only about once a week. And change-over is *only a 5-minute job!*

With shovels operating 8 hours a day, 5 days a week, this is a mighty important advantage for Mt. Vernon. No wonder they say—"These Simplex teeth really stand up in service, especially in rock, and save us a lot of downtime."

*Patent No. 2,904,908

AMSCO CRUSHER ROLLS HANDLE 50,000 YDS. BETWEEN BUILD-UPS

AT HIGHWAY MACHINERY COMPANY

Carroll Hicken (left) owner of Highway Machinery Company, Waukesha, Wisconsin, is a long-time user of Amsco equipment. His firm designs and manufactures self-propelled machines for crushing road material, both gravel and stone. All of their machines are rented out or sold to contractors, with maintenance and service handled by Highway Machinery.

For years, the company has used Amsco Manganese Steel Crusher Rolls exclusively. Amsco Manganese welding rods and bars are also used for build-up. On a typical rental machine, pictured at right, the Amsco rolls had *crushed over 50,000 yds. since their last build-up* six months before.

Mr. Hicken says that with Amsco Manganese rods he can multiply the life of a roll by 5 to 10 times. He adds—"They have proven very fine, and we're getting more yardage than with any rods we formerly used."

AMSCO

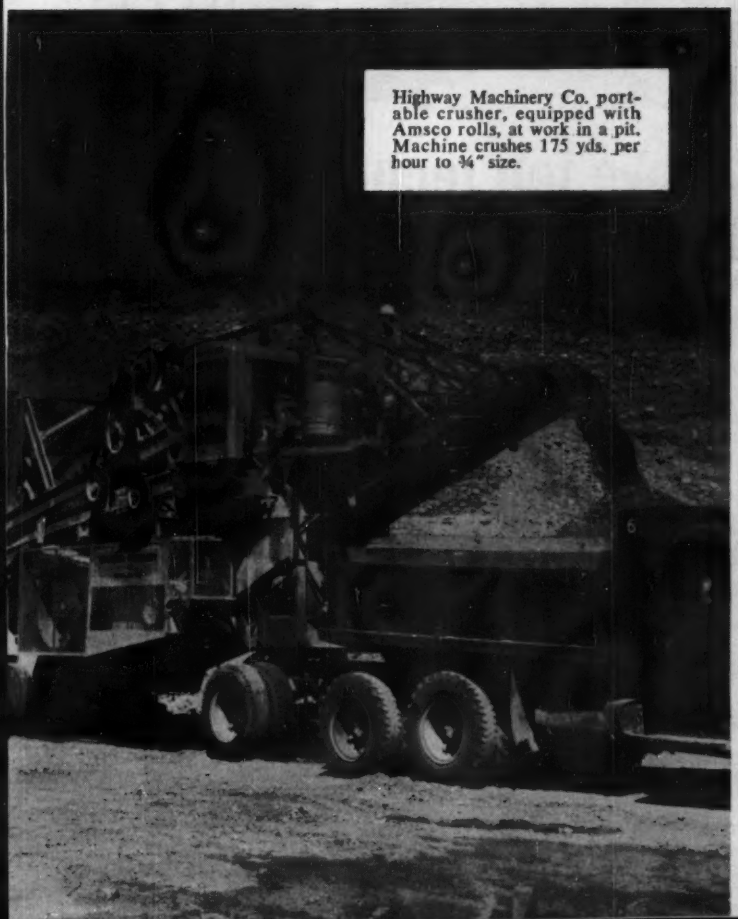
AMERICAN Brake Shoe COMPANY

American Manganese Steel Division • Chicago Heights, Ill.

Other plants in: Denver • Los Angeles • New Castle, Dela. • Oakland, California • St. Louis
In Canada: Joliette Steel and Manitoba Steel Foundry Divisions
Welding products distributed by Canadian Liquid Air Co., Ltd.

Northwest shovel, equipped with Amsco Dipper and Simplex 2-Part Teeth, at work on Cross Westchester Expressway project.

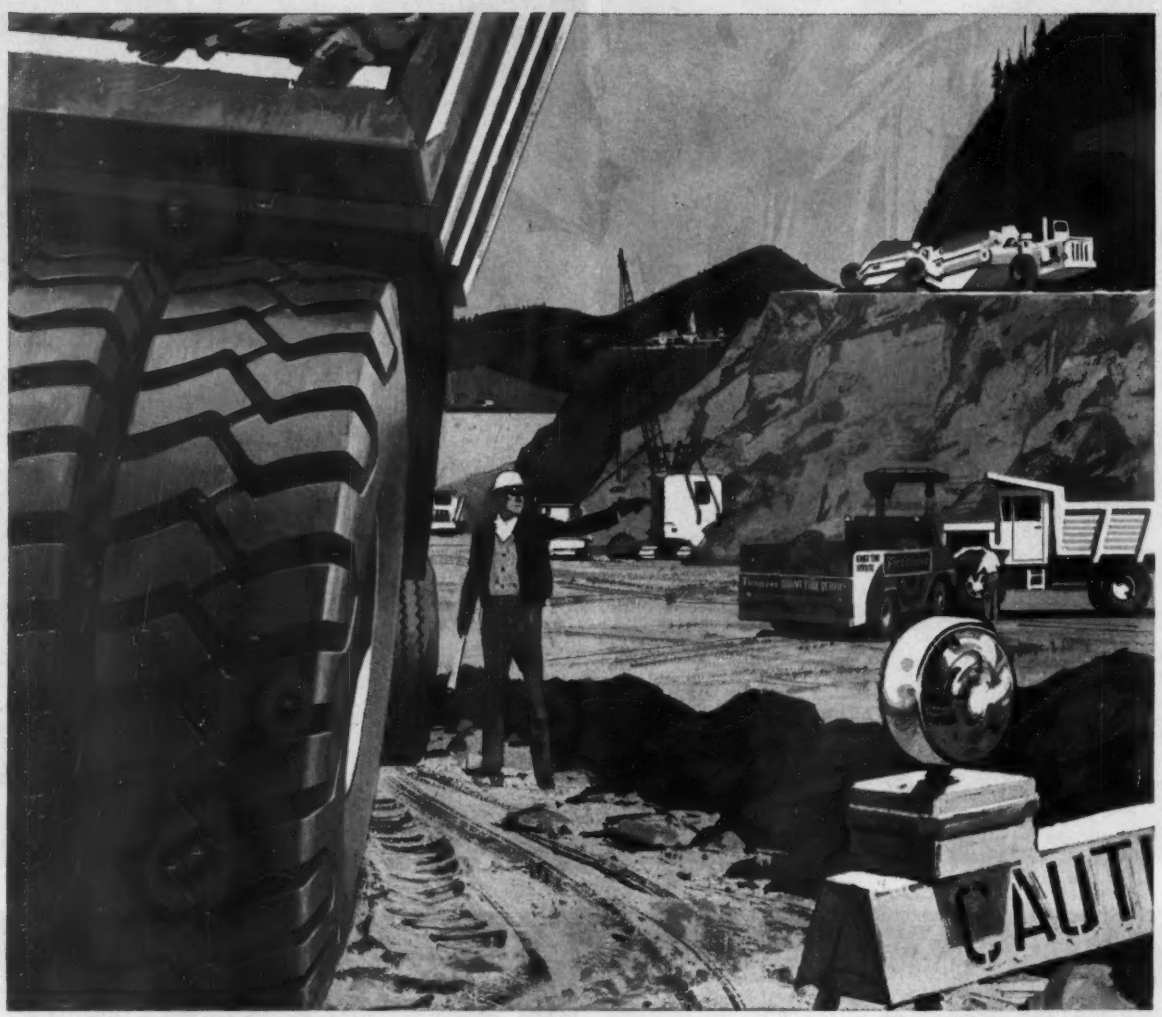
Shovel operator, Walter Reich, inspecting Amsco Simplex 2-Part Teeth used on Mt. Vernon Contracting Corp. shovel.



Highway Machinery Co. portable crusher, equipped with Amsco rolls, at work in a pit. Machine crushes 175 yds. per hour to ¾" size.

Amsco 25 x 24 manganese steel crusher rolls, of type used in portable crusher at left.

Welder demonstrating how Amsco Manganese rods are used for build-up on rolls.



Where heavyweights move job records prove...
FIRESTONE TIRES LOWER OPERATING COSTS!

From project start to finish, Firestone off-the-highway tires help keep equipment moving—help turn downtime losses into on-schedule profits. Firestone SHOCK-FORTIFIED nylon cord protects against punishing impact damage. And in every Firestone off-the-highway tire you get the extra hours of service only Firestone Rubber-X, the longest-wearing rubber ever used in Firestone off-the-highway tires, gives you. With Firestone's Giant Tire Service, a Firestone Tire Expert will match tires to every need on any project. And he'll promptly and expertly handle all your tire maintenance. Get in touch today with your Firestone Dealer or Store, or write to Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Co., Akron, Ohio.

ALWAYS SPECIFY FIRESTONE TIRES WHEN ORDERING NEW EQUIPMENT

Super Rock Grip Wide Base* Super Rock Grip Deep Tread*

TUBELESS OR TUBED

Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1960, The Firestone Tire & Rubber Co.

*Firestone T.M.

CONSTRUCTION BUSINESS

. . . continued from page 50

months ending December '60, compared with a 4.4% increase in the 12 months of 1959.

Only a slight additional increase is likely during the next five months in this index that measures the trend in prices that contractors pay for basic construction materials and labor. The three key materials will continue relatively stable. Local prices of Portland cement and mill prices of structural steel will remain steady, while lumber prices will probably recede a bit more as mills compete price-wise in unloading unusually large inventories.

SOME BIG CONTRACT AWARDS OF THE MONTH

Caldwell-Wingate and **Alvin Benjamin** both of New York City. A joint venture to construct 22 apartment buildings in The Bronx, New York City. Meat Cutters and Butchers Union, 113 W. 42nd St. $96,000,000.

W. S. Bellows Construction Corp., Houston, Tex. Erect superstructure for a 44-story office building in Houston. Humble Oil & Refining Co., 1216 Main St. $32,000,000.

Raymond International Inc., New York, N. Y., **Henry J. Kaiser Co.**, Oakland, Calif, **Macco Corp.**, Paramount, Calif., and **Puget Sound Bridge & Dredging Co.**, Seattle, Wash. A joint venture to construct 12 Atlas missile launching sites in New York and Vermont. Corps of Engineers, 111 E. 16th St., New York 3, N.Y. $24,408,000.

H. B. Zachry Co., San Antonio, Tex., and **Brown and Root Inc.**, Houston, Tex. A joint venture to construct Atlas missile launching complexes in the vicinity of Dyess Air Force Base, Abilene, Tex. Corps of Engineers, 100 W. Vickery Blvd., Fort Worth, Tex. $20,075,000.

Consolidated Engineering Co., Inc. Baltimore, Md. Construct an 830,000-sq-ft automobile assembly

OUTLASTS SHOVELS THAT COST YOU $12 A DOZEN MORE

- The *only* shovel with a *full-length* backbone.
- 13 gauge strength in the center, *all the way to the cutting* edge. Tapered to 17 gauge at the sides for light weight.
- 2 inches longer (11") socket, with tabbed top.
- Highest strength ash handle, not weakened by chucking at top of socket.
- A center-balanced, clean-scouring shovel *guaranteed to give you more service per dollar than any other on the market.* Sold by leading distributors.

RAZOR-BACK

THE UNION FORK & HOE COMPANY
Columbus 15, Ohio

NOW—AIR TOOLS WHEN NEEDED

Worthington's Guaranteed Availability Plan keeps a full complement of tools on the job even if some are in the shop for checkup or repair. All you do is: 1) bring your hand-held Blue Brute air tool to your Worthington distributor. 2) While it's in his shop he will lend you another tool.

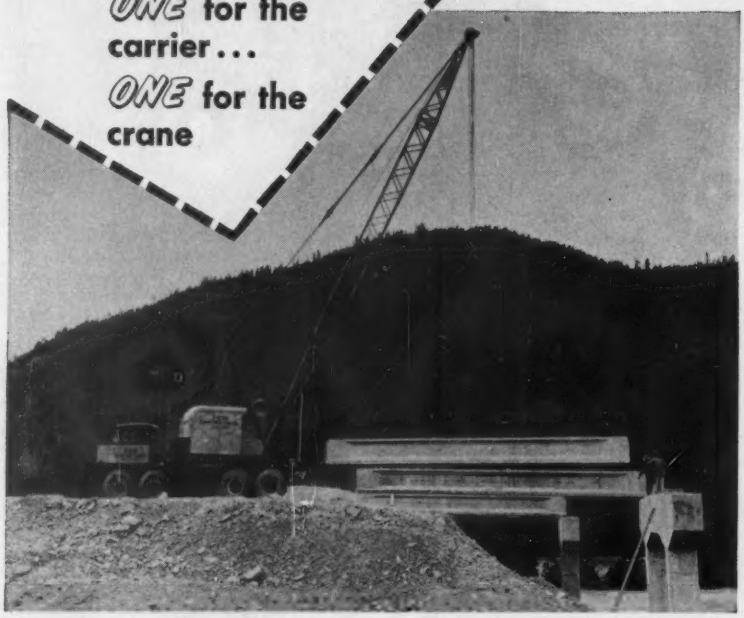
See your nearest Worthington distributor for complete details about the Guaranteed Availability Plan. Worthington Corporation, Holyoke, Massachusetts.

60-16

WORTHINGTON

TWO
WAUKESHA
ENGINES

ONE for the carrier...
ONE for the crane



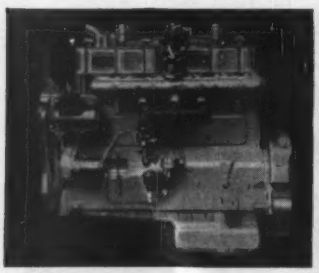
On new interstate highway near Tarkio, Montana—Pew Construction Co., contractors, of Missoula, Montana, are building overpasses for the Montana Highway Department, using an MC-530W Lorain truck-crane with two Waukesha Engines.

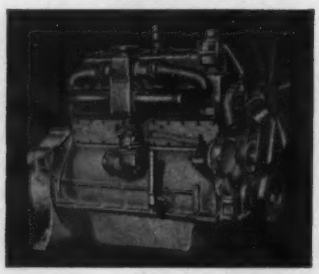
Setting prestressed concrete beams—40 to 45 ft. long, weighing 10½ to 12½ tons each — constructing highway-over-highway overpasses! And, lifting these beams on a radius of 32 ft., with a 65 ft. beam, the Lorain truck-crane did the job handily. Its crane engine, a Waukesha gasoline 135-GZB, has the sheer lifting power, and the quickly responsive, smooth power for maneuvering, with reserve power when needed. The carrier engine, a Waukesha gasoline 145-GKB, "has lots of power for the road" says the crane operator.

Send for Engine Bulletins.

Powering the Carrier—145-GKB
Waukesha Gasoline, 5¼-in bore x 6-in. stroke, 779 cu. in. displacement. Max. hp 240 @ 2400 rpm.

Powering Crane (boom) 135-GZB
Waukesha Gasoline, 4⅜-in. bore x 5-in. stroke, 451 cu. in. displacement. Max. hp 153 @ 2800 rpm.





WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES
Factories — Waukesha, Wisconsin, and Clinton, Iowa 485

CONTRACTS AWARDED . . .
continued

plant in Baltimore. General Motors Corp., 3044 W. Grand Blvd., Detroit, Mich. $12,000,000.

Winston Bros. Co., Johnson, Drake & Piper, Inc., and **Green Construction Co.,** Minneapolis, Minn. A joint venture to construct power conduit and tunnels for Spring Creek Power Station near Redding, Calif., Bureau of Reclamation, Dept. of the Interior, Lewiston, Calif. $11,617,104.

Guy F. Atkinson Co., Long Beach, Calif. Construct a three-level interchange at the junction of the Golden State and Glendale Freeways with an additional 3.7 mi of freeway including bridge and ramp structures. State Division of Highways, 120 S. Spring St., Los Angeles, Calif. $11,712,105.

George A. Fuller Co., New York, N.Y. Erect a 10-story bank and office building in Jacksonville, Fla. Florida National Bank, 112 W. Adams St. $10,000,000.

Robert E. McKee Construction Co., Dallas, Tex. Construct a medium-security prison in Moberly, Mo. Missouri Board of Public Buildings, 100 State Capitol, Jefferson City, Mo. $8,798,400.

Griffith Co., Los Angeles, Calif. Construct 1.2 mi of eight-lane elevated freeway on the Santa Monica Freeway in Los Angeles. State Division of Highways, 120 S. Spring St. $6,898,595.

Al Johnson Construction Co., Minneapolis, Minn. and **Peter Kiewit Sons' Co.,** Omaha, Neb. Construct a dam overflow section at Dardenelle Lock and Dam on the Arkansas River. Corps of Engineers, 300 Broadway, Little Rock, Ark. $6,897,840.

Crow-Barney Construction Co., New York N. Y. Erect a 14-story office building in Brooklyn N. Y. Brooklyn Union Gas Co.. 167 Remsen St. $6,400,000.

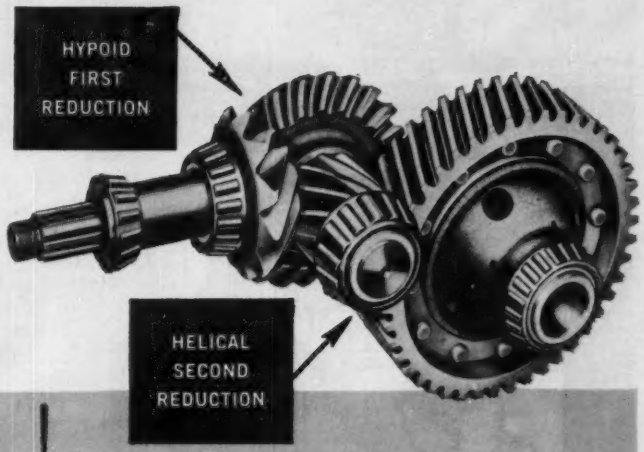
Engstrum & Nourse, San Francisco, Calif., and **Stolte Inc.,** Los Angeles, Calif. Construct an eight-story chemistry building in Berkeley, Calif. Board of Regents, University of California, Administration Bldg. $6,162,500.

continued on page 59

Heavy-Duty Hauling Jobs Are Easy With Timken-Detroit®

BALANCED HYPOID-HELICAL DOUBLE-REDUCTION AXLES

Timken-Detroit balanced hypoid-helical double-reduction gearing is unequalled for top performance and dependability. Outstanding advantages that make it the choice of heavy-duty equipment manufacturers and operators are: big, husky gears . . . greater flexibility in gear ratios . . . balanced gear set loadings . . . long life and low maintenance costs. The hypoid first reduction is 30% stronger than spiral bevel, and works in series with the second reduction to take an equal share of the load. In the helical second reduction, strong helical gears with a wide range of ratios insure balanced double-reduction gearing.



240 SERIES
SINGLE-SPEED, HYPOID-HELICAL DOUBLE-REDUCTION

Two full-sized gear sets form a balanced power train—with each gear set accomplishing a substantial reduction. This combination of husky hypoid first reduction gears coupled with rugged, wide-faced helical second reduction gears provides a double-reduction gear set that outperforms all others. Because the ratios of each reduction may be varied, you get a balanced power train with the larger selection of axle ratios for maximum operational versatility and performance.

340 SERIES
TWO-SPEED, HYPOID-HELICAL DOUBLE-REDUCTION

A true two-speed axle which provides two separate gear ratios through the use of two full-size helical gear sets . . . a "fast" ratio for maximum speeds and a "slow" ratio for greatest pulling power. Pick the most efficient gear ratio to meet your requirements of speed, load and road. Spring-flex power shifting provides simple, positive shifting with either air, vacuum or electric actuation. Timken-Detroit two-speed hypoid-helical double-reduction axles give a versatility and economy to trucking operations that is unmatched by other axle gear designs.

choice of two—

INTERCHANGEABLE BALANCED DOUBLE-REDUCTION DRIVES

Another Product of...

ROCKWELL-STANDARD CORPORATION

Transmission and Axle Division, Detroit 32, Michigan

Radio control keeps everyone on the go by keeping drivers in the know!

What caused your last work stoppage? Could it have been prevented by radioing your foremen and supervisors the exact job condition—letting them send their trucks directly to areas where materials or equipment were needed immediately? How much time and money would you have saved? Take your own work. How much time can radio save you in conferring, checking, planning, and trouble shooting?

Ask a nearby Motorola 2-way radio user. Learn firsthand how you and your foremen can become more productive—saving miles and minutes with each 2-way radio message.

Why Motorola? You get highest dollar value! 1. A custom-planned system engineered to your specific requirements—Motorola assumes complete responsibility for your system. 2. The right equipment—from the world's most complete line of communications tools—Motorola has thousands of installations in every conceivable type of vehicle. 3. Unmatched reliability, proved by the majority of the nation's utilities, police, fire and transportation services—the professional buyers of 2-way radio. 4. Motorola service by factory-trained technicians from nearby maintenance centers—keeps your system at factory peak performance for long-lasting service and satisfaction. These are some of the reasons Motorola outsells all other makes combined!

Call your local Motorola Factory Sales Engineer—or write today to see how 2-way radio can most profitably serve you. For companies with operations abroad—Motorola sales and service are available in 50 countries throughout the world.

MOTOROLA 2-WAY RADIO

Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Ill. • A Subsidiary of Motorola Inc.

CONTRACTS AWARDED . . .

continued from page 56

Associated Construction & Engineering Co., San Francisco, Calif. Construct the Northmark Office Center including restaurant, post office, and off-street parking facilities. Mar Co. Enterprises, 1299 Bayshore Hy., Burlingame, Calif. $6,000,000.

Tellepsen Construction Co., Houston, Tex. Erect a hospital building in Houston. Methodist Hospital, Texas Medical Center, 6516 Bertner St. $6,164,600.

S. J. Groves and Sons Co., Des Planes, Ill. Construct an entrance road at O'Hare International Airport, Chicago, Ill. Dept. of Public Works, City Hall. $5,986,734.

Beacon Construction Co., Boston, Mass. Erect 330 Capehart housing units at Wurtsmith Air Force Base, Oscodo, Mich. Procurement Office, Wurtsmith Air Force Base. $5,377,000.

Liberty Construction Co., Short Hills, N.J. Construct two 15-story apartment buildings in Bloomfield, N.J. Azeglio Pancani, Jr., 11 Commerce St., Newark, N.J. $5,000,000.

Hunt, Huber & Nichols Co., Indianapolis, Ind. Erect a thermoplastic molding factory in Indianapolis. Western Electric Co., Inc., 2525 Shadeland Ave., $5,000,000.

Perini Corp., Framingham, Mass. Construct a six-story Public Safety building in the Civic Center, Rochester, N.Y. Rochester-Monroe Civic Center Comm., City Hall. $4,569,000.

Alvord & Swift, New York, N.Y. Complete alteration and air-conditioning installation for an office building in New York City. New York Telephone Co., 140 West St. $4,500,000.

Johnson, Drake & Piper, Inc., Downey, Calif. Construct a silo for missile launching complex at Vandenberg Air Force Base in Lompoc, Calif. Corps of Engineers, 751 Figueroa St., Los Angeles, $4,114,000.

F. C. Wagman, Inc., Dallastown, Pa. Construct 3 mi of reinforced highway including six bridge structures. State Highway Dept., Harrisburg. $4,076,571.

To meet ALL your requirements for

Concrete Forming

. . . EFCO and ECONOMY FORMS

Typical jobs using EFCO ECONOMY FORMS

3 form services:

1. *EFCO Steel Forms*—Available on a purchase basis with return option. Owners are supplied with free form erection drawings.
2. *Economy Steel Forms*—Available on a rental basis. Supplied with supervisory service and free form erection drawings.
3. *Special Economy Forms*—Designed and built to your specifications for unusual jobs. Include special forms for precast, prestressed concrete.

Versatile:

Adaptable to a wide range of projects including:

- Foundations and Walls
- Wall Footings
- Bridges, Bridge Columns
- Tanks—Circular and Rectangular
- Water and Sewage Plants
- Sidewalks
- Culverts
- Reservoirs
- Precast, Prestressed Members

Economical:

Save you time, labor, material. Steel faces assure lifetime service. Forms lock together quickly, easily, with a simple twist of a clamp.

Prompt Delivery:

29 offices, and warehouses throughout the nation, assure prompt service and speedy delivery. Economy Forms of Canada, Ltd. supplies Canadian contractors.

For further information . . . .

Mail Coupon TODAY

Economy Forms Corp.
Box 128-N, H. P. Station
Des Moines, Iowa

Please send literature on items checked, and address of nearest sales office.

- ☐ Catalog on EFCO Steel Forms
- ☐ Catalog on Economy Steel Forms
- ☐ Catalog on Special Economy Forms
- ☐ Folder on Economy Forms for pre-cast, pre-stressed concrete

Name _____

Firm Name _____

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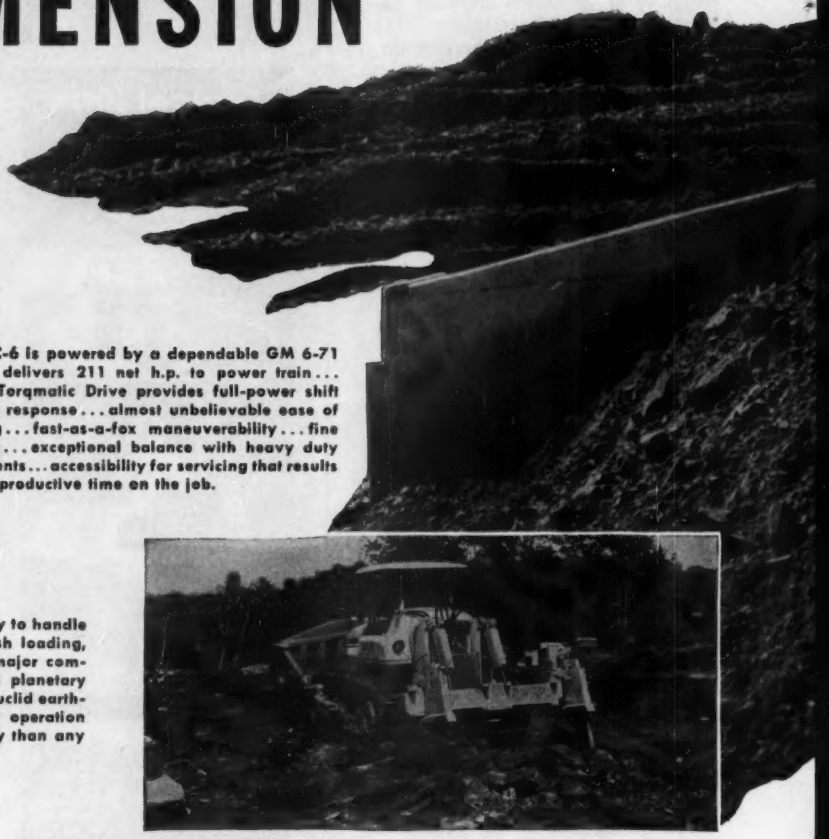
City _____ State _____

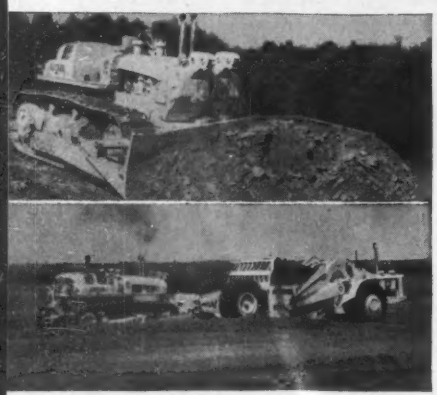
EUCLID'S GREATER DIMENSION



Model C-6 is powered by a dependable GM 6-71 engine; delivers 211 net h.p. to power train... proven Torqmatic Drive provides full-power shift and fast response... almost unbelievable ease of handling... fast-as-a-fox maneuverability... fine visibility... exceptional balance with heavy duty attachments... accessibility for servicing that results in more productive time on the job.

The C-6 has the speed, power and maneuverability to handle every kind of tractor job... ripping, dozing, push loading, clearing, towing and other heavy work. Many major components including Torqmatic Drive, engine, and planetary drive axle have been job proved in thousands of Euclid earth-movers. Owners say that full-power shift, easy operation and fast response give the C-6 more work-ability than any other crawler in the 200 h.p. class.

Facts and figures on the Model C-6 and Model TC-12 "Eucs" are available from the Euclid dealer in your area... get in touch with him soon!



Greater Dimension in power and performance... TC-12 has 2 engines that deliver a total of 425 net h.p.... independent track drive with separate power train and Torqmatic Drive for each track... full-power shift and instantaneous reverse... 8 track rollers... unequalled accessibility for servicing... maneuverability and workability that have set new standards of big tractor performance.

Proven Torqmatic Drives deliver a smooth flow of power to each track... with full-power shift there's no delay for clutching and shifting... change direction with a flick of the wrist... 425 total net h.p. is automatically matched to every job requirement... rigid track alignment maintained by independently suspended track frames and final drives... years-ahead engineering reduces downtime and maintenance costs for a better return on investment.

Crawlers without full-power shift are obsolete... and costly!

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

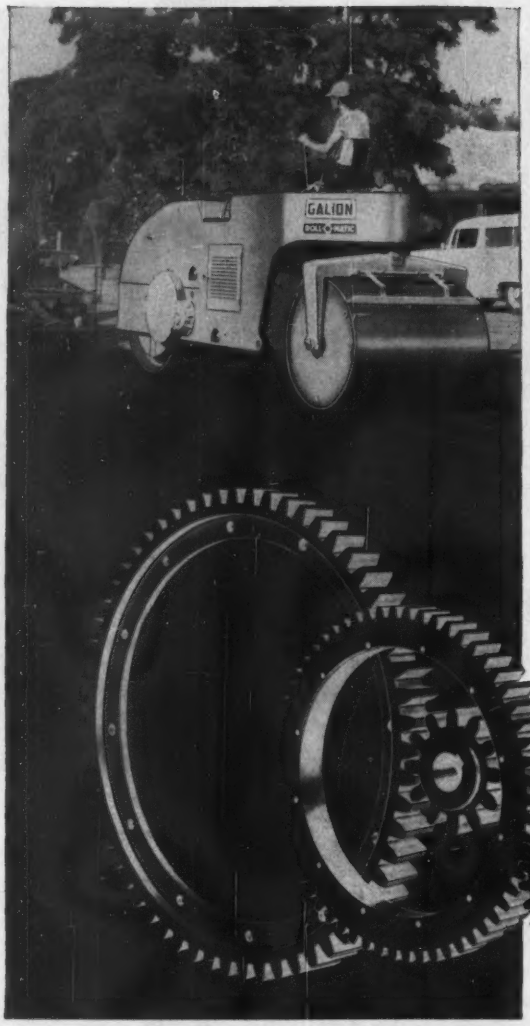
IN MODERN CRAWLER DESIGN

With over twenty-five years of experience in building heavy earth-moving equipment exclusively, Euclid offers a greater range of types and capacities, a greater background of field experience, and a greater return on your equipment investment.

One example of this greater dimension was the introduction of the Model TC-12 Crawler over 5 years ago. Here was an entirely new concept of tractor design . . . two engines, each driving a separate track through its own Torqmatic Drive . . . unequalled power and work-ability . . . performance that set a new standard of crawler productivity . . . ease of operation and servicing that is still unsurpassed in the industry.

Recently the Model C-6 Euclid tractor went into production after the most comprehensive field trials and proving ground testing ever given any new Euclid model. It, too, has Torqmatic Drive and full-power shift as well as many of the advanced design features of the bigger TC-12. And like the "Twin", the new C-6 utilizes major components that have been job proved in thousands of "Eucs" in construction, mine and quarry service. For instance, the Allison converter and semi-automatic transmission "package" has long since passed the pioneering and development stage . . . it's been used in "Euc" scrapers, rear-dump haulers and other models for years. These two Euclid crawlers provide so much more work-ability that they obsolete tractors without the operating advantages of full-power shift.

EUCLID Division of General Motors • Cleveland 17, Ohio

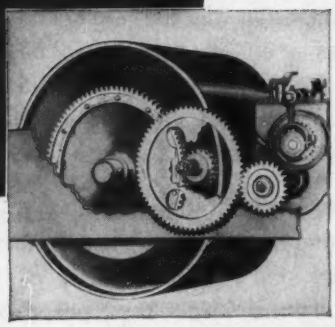


IF YOU KNOW GEARS

– you know that gradual reduction and low speeds (each gear with roller bearings) plus a straight-line spur gear train, develop the *least* friction and consequently cause the *least* gear wear. That is why Final Drive gears on Galion Tandem Rollers last the longest without adjustment or replacement.

REMEMBER!

ROLLER RELIABILITY – depends largely on its FINAL DRIVE mechanism



- **GALION FINAL DRIVE GEARS are all *Spur Gears.***
- **GALION FINAL DRIVE is a *two step* gear reduction train thru four spur gears — a *straight line* drive.**
- **GALION FINAL DRIVE greatest gear ratio is *only 5 to 1.***
- **GALION FINAL DRIVE spur gears are special alloy steel, accurately *machine cut* and heat-treated. No ordinary, uncut, cast gears are used.**
- **GALION FINAL DRIVE has *no small beveled pinion gear* driving a *large bevel ring gear* on the roll.**

Think of these advantages of the Galion Spur Gear Final Drive before you buy a tandem roller.

SPUR GEAR GALION FINAL DRIVE

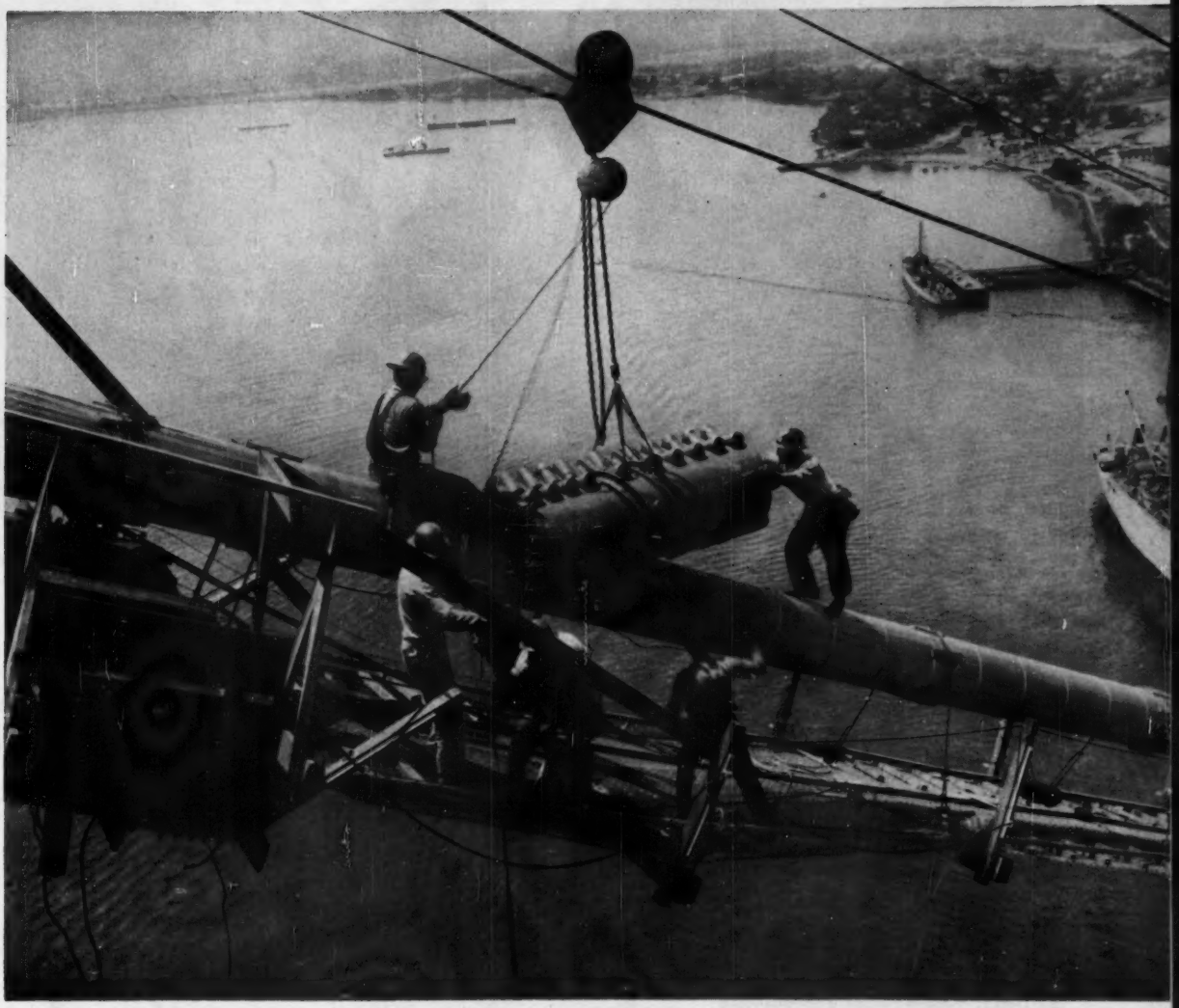
TANDEM ROLLERS

THE GALION IRON WORKS & MFG. COMPANY

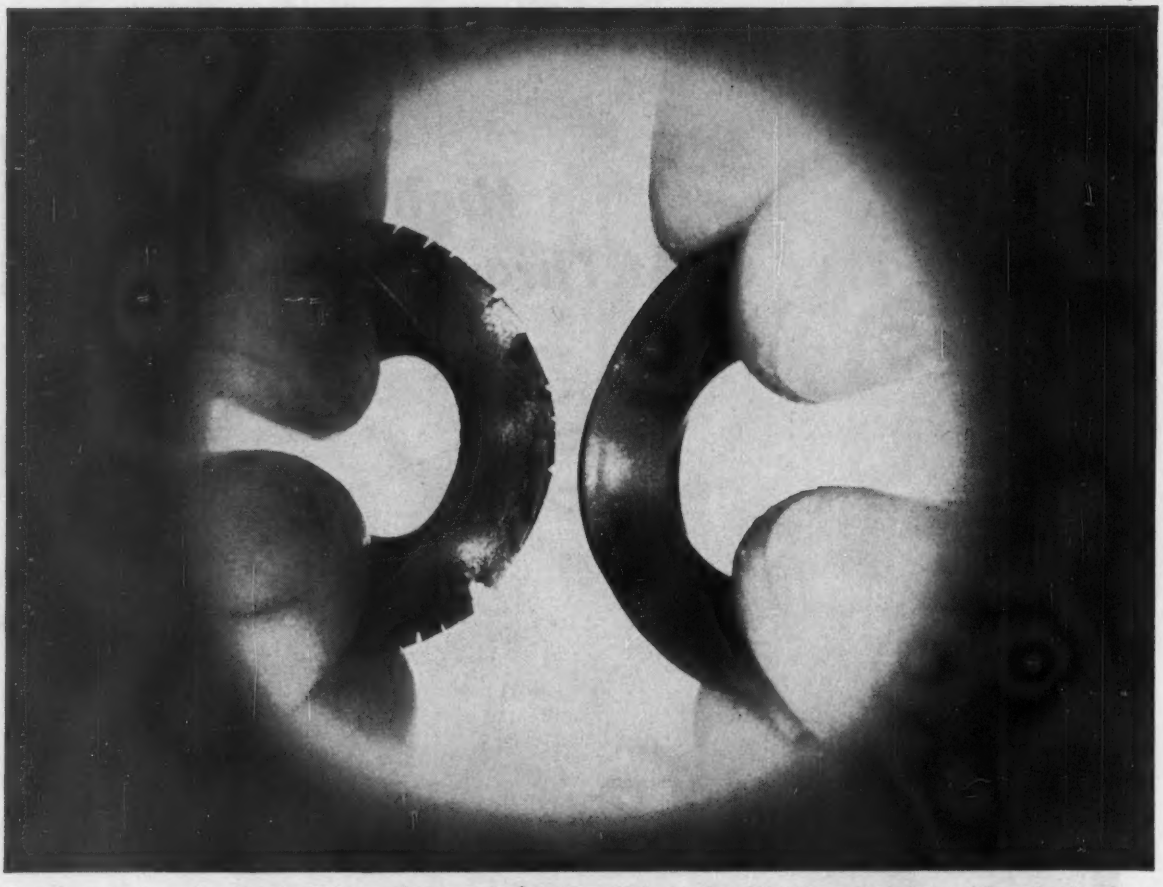
General and Export Offices — Galion, Ohio, U. S. A. Cable address: GALIONIRON, Galion, Ohio

High Steel At Throggs Neck

PICTURE OF THE MONTH



• Ironworkers of American Bridge Div. of U. S. Steel Corp. place a suspender cable band on the main cables of the Throggs Neck Bridge that will connect New York City's boroughs of the Bronx and Queens. The bridge is 13,953 ft long including the approaches. The main span is 1,800 ft long and the two back spans are 555 ft each. American Bridge started cable spinning last December. They have placed 14,000 mi of wire in the main cables. Now they are installing suspender cable bands and suspender ropes. The $90-million structure, being built by New York's Triborough Bridge and Tunnel Authority, is scheduled to be finished early in 1961.



Two torque converter seals, subjected to 300 hours of service at 325° F., show added protection of D-A Torque Fluid. Seal on left, used with ordinary torque fluid, is brittle and cracked, has shrunk excessively. Seal on right, used with D-A Torque Fluid, remains resilient and reveals no cracks or deterioration. It was protected by D-A's *exclusive* preservative.

only D-A TORQUE FLUID gives these SIX advantages . . .

1. 4% to 5% more efficiency with D-A Controlled Viscosities

2. More high-temperature protection . . . will not thicken excessively

3. Better cold-weather performance with −35° F. pour point

4. Oxidation stability . . . stops sludge, varnish, corrosion

5. Exclusive D-A seal preservative prevents seal trouble, leakage

6. Longer operation periods between lubricant changes

For better performance, less maintenance, longer equipment life, it pays to use D-A Torque Fluid in heavy-duty automatic transmissions, hydraulic systems and rotary compressors. Contact your local D-A representative for full details on D-A Torque Fluid. Prove to yourself: you can boost your profits with D-A.

Lubricating heavy-duty equipment across the nation since 1919.

D-A LUBRICANT COMPANY, INC. • INDIANAPOLIS 23, IND.

Employee Gift Matching

Another Good Way To Help Our Colleges And Universities

The business community continues to make an impressive record in giving badly needed financial help to our colleges and universities. This year the Council for Financial Aid to Education expects that business contributions to higher education will be well over four times their total of about $40 million a decade ago.

If these contributions, which were about $150 million last year, continue to increase at the present rate, they will hit the target of $500 million set for business aid to our colleges and universities in 1970. This is the amount which, the Council calculates, must come from business if these institutions are to have the money to do their job properly a decade hence.

However, it would be a fine thing both for the nation and the business community if that $500 million dollar target were hit well before 1970. This would put us ahead of a schedule (it is a conservative schedule) in getting on top of what remains one of the nation's most crucial problems—that of having its colleges and universities adequately financed which they are very far from being right now.

There is, we believe, one quite simple way by which financial support for higher education by business firms might be considerably speeded up. All that is required is that business firms generally abandon the idea that it is possible for every company to have a program to provide such support that is novel and distinctive, and that this is the only way that interests of prestige and good public relations can be served.

There are nowhere near enough good plans to provide financial help for higher education to equip even a small percentage of our business firms with one that is novel and distinctive. Also **there are a number of very good plans which, so far as we can tell, lose nothing of their value for prestige and good public relations by being used by a large number of companies.**

The Gift Matching Idea

One plan with these attractive characteristics is the plan by which companies match the gifts of their employees to colleges and universities, and now increasingly gifts to independent secondary schools. So far as we can discover the general plan was invented by the General Electric Company, with what it calls its Corporate Alumnus Program. Now, with variations on the same basic design, almost 100 companies have gift matching plans. We at McGraw-Hill are included in this number.

The gift matching plans vary considerably in detail. Some are limited to alumni of the schools to be benefited. In others any employee can participate by making a gift to an eligible institution. There are also variations in the maximum amounts of gifts by individuals and to individual institutions which will be matched. Some companies have "open end" plans; others limit the total to be matched in any one year. All of the plans, however, embody the same central gift matching idea.

When the plan was first launched some college administrators of little faith in the fundamental generosity of the alumni and friends of their schools expressed the fear that if gifts were to be matched they might be made smaller in the first place. The opposing view was that the possibility of having them matched would stimulate more and larger gifts.

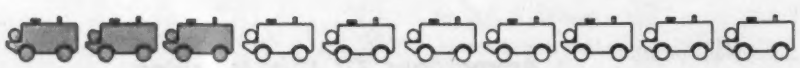
Advantages Of Gift Matching

So far as we have been able to discover, the expectation that giving would be stimulated by gift matching has been validated by the experience with the plans. This has been our experience at McGraw-Hill. Some other important virtues of the gift matching programs have been summarized by

continued on page 68

New Blue Brute drilling team—Worthington Blue Brute 900′ rotary compressor with over/under design operates two Blue Brute crawler-mounted 4½″ drills.

Why your next 900′ compressor will

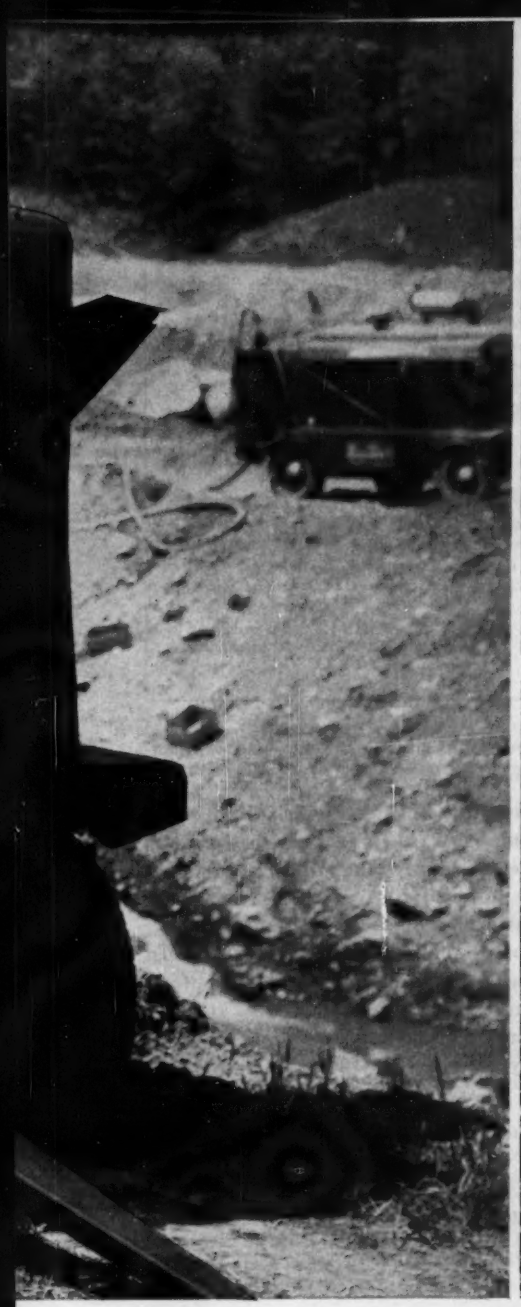


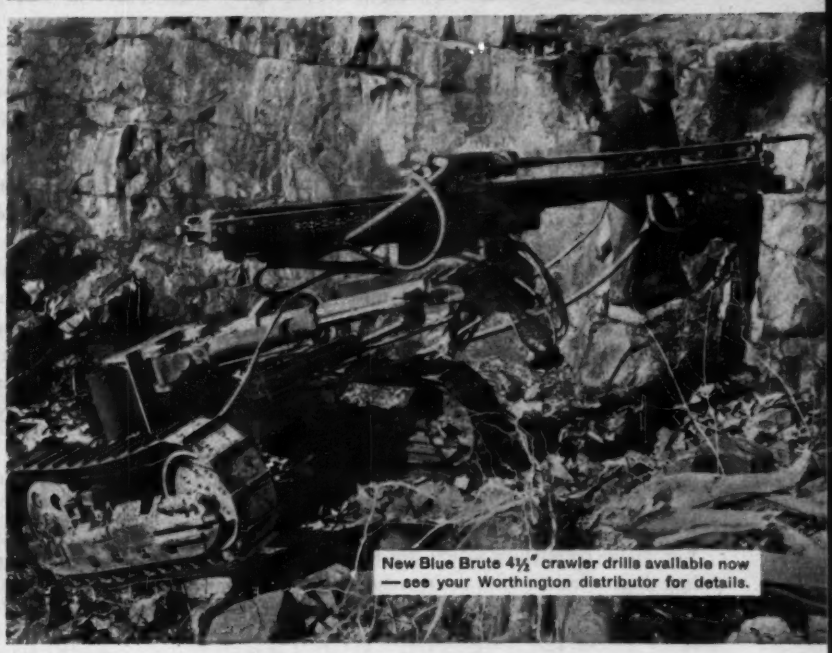
Most manufacturers build their small rotary compressors with end-to-end design. Only 3 out of 10 produced use over/under construction (shown in blue)...

Yet in the 900′ size, more over/under units are sold than any other. The story opposite tells why...

If you looked inside every rotary compressor on the market you would find one major difference that separates the men from the boys.

A few manufacturers build their rotaries with over/under design: i.e. the compressor's second stage is directly underneath the first. This results in an improved rotary with many benefits. The cylinders are self-draining (this stops clogging) and easy to get at for repairs. All principal parts can be re-





most likely have OVER/UNDER design

moved for inspection and replaced in a hurry.

The superiority of over/under design is indicated by the fact that in the largest, most expensive size (the 900′ unit) *more over/under rotaries are bought than any other kind.* Yes, it takes over/under design to handle heavy jobs, such as operating *two* Worthington 4½″ Blue Brute drills which get maximum drilling footage with least air consumption and less maintenance.

Worthington is one of the few manufacturers that offer over/under design in every compressor in its line. Worthington Blue Brute rotaries made with over/under design are built in 125′, 210′, 315′, 365′, 600′ and 900′ sizes. (A single-stage 85′ rotary is also available.) There's a complete line of Blue Brute drills, too—right through the 4½″ size. Ask your nearby Blue Brute distributor for a demonstration. You'll find him in the Yellow Pages under "compressors." Or write Worthington Corporation, Dept. 60-24, Holyoke, Mass. In Canada: Worthington (Canada). Ltd., Brantford, Ontario.

WORTHINGTON

LEADERS OF SOME OF THE INSTITUTIONS WHICH HAVE SHARED IN THE McGRAW-HILL EMPLOYEE GIFT MATCHING PROGRAM EXPRESS THEIR VIEWS

"We particularly appreciate the fact that your grant is unrestricted, and can therefore be used for our area of greatest continuing need — the General Education Fund, from which faculty salaries come."

W. Boyd Alexander, Vice President and Dean of the Faculty
Antioch College

"We are grateful, not only for the financial support given to The Cooper Union by your company, but also for the stimulus it has provided our alumni in your employ to make annual gifts to their Alma Mater."

Edwin S. Burdell, President
The Cooper Union

"The gift matching program has a dual advantage. First, it acknowledges and repays a debt of honor to those colleges which, often at great loss to themselves, have trained and educated the men who are now among your personnel. This is most fair and equitable. Secondly, by offering to match up to a given limit the contributions of alumni, you encourage support of their own colleges on the part of graduates, who themselves are so indebted."

President Edward B. Bunn, S. J.
Georgetown University

"Thanks to your doubling of the annual gifts of one of our generous and loyal friends who works with you at McGraw-Hill, we are well on the way toward creating what for us will be an extremely helpful scholarship fund. This would not have been possible without the gift matching program."

C. Adrian Heaton, President
California Baptist Theological Seminary

Ernest T. Stewart, Executive Director of the American Alumni Council (1785 Massachusetts Avenue, N.W., Washington, D.C.) who would be glad to provide detailed information about them, and the names of companies having such plans. Of the gift matching idea he says,

> "*First*—it assures the corporation that its gifts go direct to those colleges and universities which have furnished it with trained manpower.
>
> "*Second*—it places responsibilities for the gifts on the institutions themselves and drives home the point that they must make a real effort with their own alumni.
>
> "*Third*—it leaves the final decision of corporate support basically to the employees."

For many companies which are fearful of complicating their relations with their customers by courting charges of favoritism if they provide direct financial support for any particular school or group of schools, this latter consideration can be of decisive importance.

The gift matching plan also has what for many companies is the very important virtue of being simply and easily administered. Some additional virtues of the gift matching plan, as seen by officers of institutions which have been beneficiaries, are indicated in the box at the top of this page.

Effective And Easily Managed

We at McGraw-Hill are well pleased with our gift matching program. It is a broad program in which all employees and a wide array of colleges and universities, both privately and publicly supported, are eligible to participate. We commend it as an effective and easily managed plan to provide urgently needed financial aid to higher education.

We also urge that business firms adopt this or one of a number of other very good programs of financial aid to higher education* rather than delay in the hope of hitting upon some quite new and distinctive plan. There are very long odds that such delay will prove unavailing. In the meantime our colleges will be losing financial help which it is profoundly in the interest of the business community and the nation to see that they get—and get fast.

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*An earlier editorial in this series dealt with tuition supplements as another good way to help our colleges and universities. Reprints of this editorial are available. So are copies of a "more or less socratic dialog," entitled, **A Business Wrestling with the Problem of Aid to Colleges and Universities.** It was prompted by the efforts of McGraw-Hill to find suitable methods of providing financial aid to higher education.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

Donald C. McGraw
PRESIDENT
McGRAW-HILL PUBLISHING COMPANY, INC.

All-Americans for a Winning Materials Handling Team

These three championship performers give you a materials handling team that is unbeatable... All-American from the basic steel—through the drawing of the wire—to the finished wire rope product.

All-American No. 1 — Whyte Strand Wire Rope. Inspires other members of your team, brings out the best in them for maximum production at lowest cost. (Write for bulletin 6025.)

All-American No. 2 — The Atlas Sling for the safety spot — lifting and carrying all kinds of loads. Flexible, braided construction provides constant championship performance with unquestioned safety. (Write for bulletin 5308.)

All-American No. 3 — Macwhyte Safe-Lock Cable Assemblies are a triple-threat specializing in uniformity, appearance, and agility... for manufactured products and equipment components requiring the positive performance of a custom-made cable assembly. (Write for bulletin 5601.)

In addition to their outstanding performance on the materials handling and production fields, each one of these All-Americans lives up to these championship qualifications: *Dependability* that is the result of constant uniformity, maintained by rigid quality controls at every step of manufacture. *Experience* that pays off in high production scores... and game-winning play with other members of your equipment team specializing in American rules of the game. *Availability* guarantees the right player for every play, whether at the factory or the warehouse... backed up by expert engineering service. *These All-American products are completely made in the U. S. A.*

Start now to build up your All-American materials handling team. Your Macwhyte representative will be glad to coach your selections.

MACWHYTE Wire Rope COMPANY

Another small fable with a large moral

A Gray Squirrel lived in a forest of great oak trees. The Squirrel dined sumptuously on the delicious acorns that grew high on the branches. But one day a visiting squirrel told of another forest, quite far away, where the trees were not nearly so tall, and where the acorns were much easier to reach. The Gray Squirrel set out for those easy pickings in the distant forest. They were tasty indeed. On his third trip he met a Hungry Fox. End of story.

MORAL: Smart squirrels know it's wiser in the long run to gather acorns in their own back yard.

Whether your needs be acorns or steel, your safest, most reliable suppliers are right here at home. No one knows the needs of American steel buyers better than American steel makers. To serve you, and serve you well, is our primary concern—not just today and tomorrow—but year after year.

For quality steel of certified analysis, meeting the appropriate specifications, you can rely on Bethlehem Steel for such products as reinforcing bars, wire and wire products, pipe, structural shapes, plates, carbon bars . . . hot-rolled, cold-rolled, and galvanized sheets . . . transmission towers and other fabricated steel, wire rope, and industrial fasteners.

And remember, our engineers are on call to help you solve your steel-working problems.

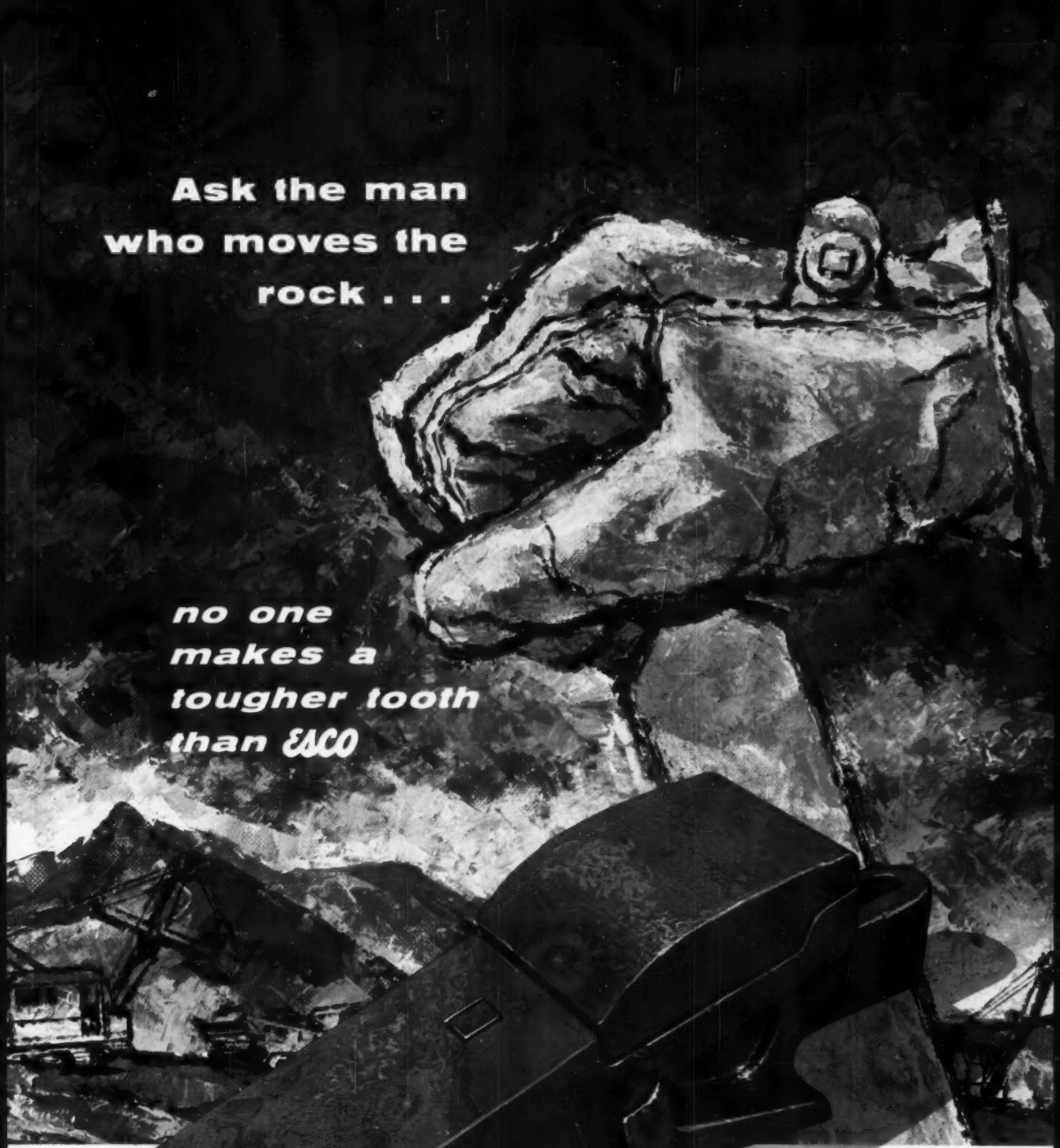
Steel

for Strength
. . . Economy
. . . Versatility

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

BETHLEHEM STEEL



The right design, the right steel, the right shape make *ESCO* Two Piece Teeth right for every digging condition.

The earth moving industry looks to

PORTLAND, OREGON and DANVILLE, ILLINOIS

See reverse for shapes and size range >

Here are the points to remember...

Each easy-to-change ESCO Point is Brinell tested to assure exactly the right degree of shock-absorbing toughness and abrasion-resisting hardness for longer life. Abrasion resistant Wear Caps (illustrated) extend adapter life.

12M ALLOY STEEL

ESCO 12M Two Piece Teeth are the toughest you can use. Developed through years of research for the earth moving industry, cast *ESCO* 12M is the finest steel made for severe shock and abrasion.

ESCO TWO PIECE TEETH

for all your digging equipment

Your *ESCO* dealer can supply two piece teeth for all your equipment. Consult him about standardizing on *ESCO* teeth for the added advantages of quantity purchasing and reduction of on-the-job inventories.

8 POINT TYPES
FOR EVERY DIGGING CONDITION

WEAR CAP ADAPTERS

The ESCO Wear Cap Adapter, winner of the Blue Ribbon Mining Award, is the most rugged tooth assembly ever developed for handling tough rock and taconite. Replaceable wear caps sharply increase service life by protecting the adapter from wear. No special pins or welding required.

GENERAL PURPOSE | ROCK | ROCK PICK | PICK | SHARP FLARED | SHARP | SHARP LONG | RIPPER

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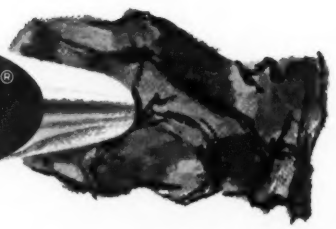
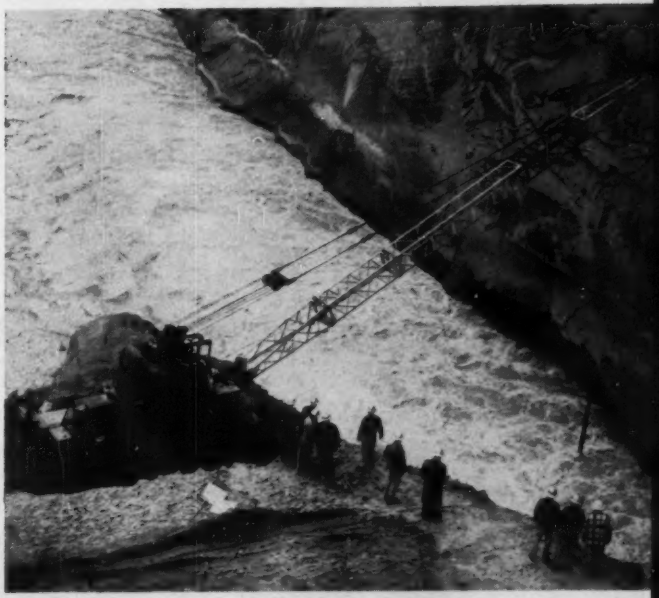


LITHO IN U.S.A.

Construction News in Pictures . . .

Hydraulic Survey

At Glenn Canyon Dam on the Arizona-Utah border, a Lorain crane handles a rail that engineers are using to probe the outlet channel of the right diversion tunnel. They want to determine its depth and make a profile. The rail is 38 ft long and weighs about a ton. Dam is part of the Bureau of Reclamation's Colorado River Project.



Niagara Conduits

Euclid rear dump deposits a load of backfill over one of the twin conduits on the Niagara Power Project. Conduits are being built in open trenches by three contractors, Merritt-Chapman & Scott Corp., Balf-Savin-Winkelman, and Gull-DeFelice. The pair of 66x46-ft ID conduits will carry water from intake to main generating plant.

Progress at Barkley

Pair of gantry cranes places concrete for walls of Barkley Lock on the lower Cumberland River. Tecon Corporation of Dallas, Tex., is working around the clock to finish the 110x800-ft lock by the spring of 1961. Work is now 75% complete. Construction of the entire $182-million project is under the U.S. Army Corps of Engineers.

Fast Steel Erection

A 20-ton Bay City crane with a 30-ft jib on the end of an 80-ft boom erects structural steel for four new factory buildings at the Jones & Laughlin Steel Corp. plant in Detroit. Two of the buildings are between, and tie into, existing ones. Taylor & Gaskin, Inc., of Detroit, is fabricating and erecting 500 tons of structural steel for the project.

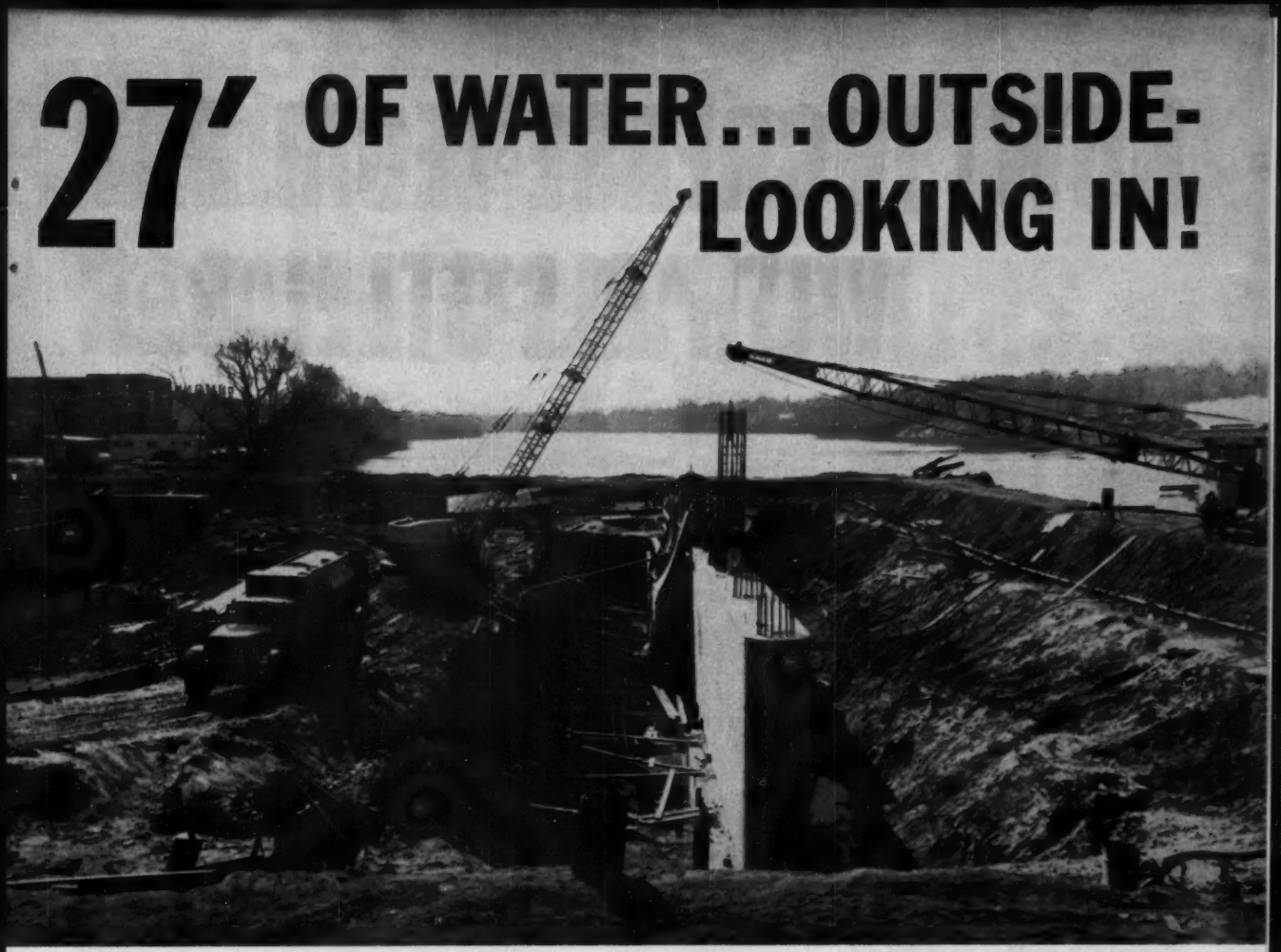
Spare That Tree

Awesome tree crushing machine, built by R. G. LeTourneau Inc., bowls over trees on land clearing job at Atlantic City Municipal Airport. Rig weighs 150 tons, has 20-ft long rollers and can clear almost 3 acres an hour. Contractors are Garden State Construction Co., J. J. Nugent Co., both of New Jersey, and Supplies Associated, of Texas.

Ganged Wall Forms

McCarthy Brothers Construction Co. of St. Louis, Mo., place ganged section of Symons Steel-Ply forms for walls of a $6.6 million apartment development for the St. Louis Housing Authority. Ganged form sections are 20 ft long and 8 ft wide. They are tied together by 2x6-in. strongbacks and walers. Forms were re-used about 20 times.

27′ OF WATER...OUTSIDE-LOOKING IN!



Owner: N. J. State Highway Dept. **Pumping Contractors: American Dewatering Corporation, Rockaway, N. J.**

Within the protection of an earth-filled cofferdam kept dry by Moretrench Wellpoints, Public Constructors, Inc., of Blackwood, N. J., excavate for Piers #5 and #6 for a bridge over the Passaic River —part of the new Route 80 Expressway which sweeps westward across the state.

This is part two of a $2,758,000 contract. Five piers on the opposite side of the river were constructed in the same economical way.

Soil consists of layers of silt, sand, gravel and bog with hardpan at subgrade. Moretrench Wellpoints successfully stabilized this material. They

- eliminated costly sheeting,
- freed the contractor to excavate rapidly with a dragline,
- effected many other economies which are possible only when you work—*in the dry*.

Ask us for a realistic estimate on water control for your wet job.

Moretrench Corporation

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Hackensack, N. J.
HUbbard 9-7676
New York Tel.: CO 7-2283

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Chicago 38, Illinois
POrtsmouth 7-4212

7701 Interbay Blvd.
Tampa 9, Florida
TAmpa 61-1881

315 W. 25th St.
Houston 8, Texas
UNderwood 4-7774

Rockaway
New Jersey
OAkwood 7-2100

WESTERN REPRESENTATIVE: Andrews Machinery of Washington, Inc., Seattle 4, Washington
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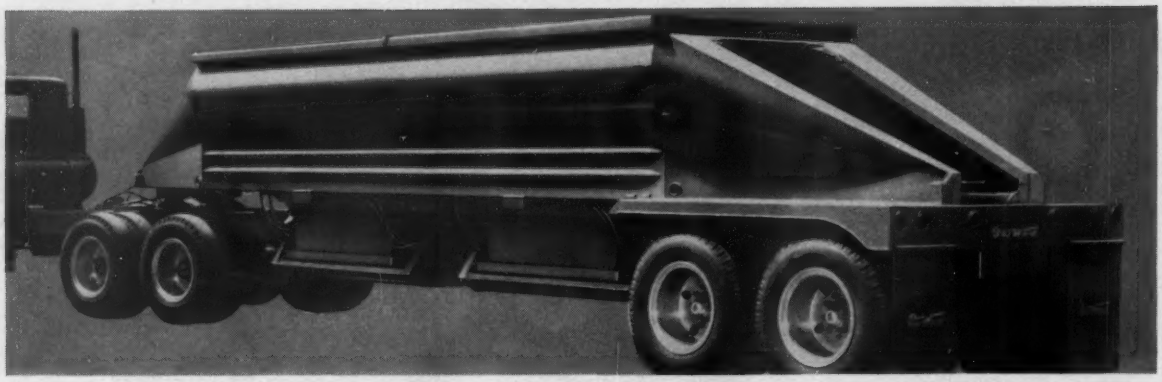
BRAZILIAN REPRESENTATIVE: Oscar Taves & Co., Ltd., Rio de Janeiro

NOW! INCREASE LEGAL PAY WITH ALL-STEEL GAR



This contractor's trailer for tandem-axle tractors holds 20 cubic yards. Other models and sizes available for single axle tractors. Can be equipped with variety of discharge gates for any application.

Seven Types of Discharge Gates Meet All Contractor Hauling Needs

A complete line of Gar Wood discharge gates tailor Mono-Shell hoppers to your exact job requirements. Each is designed for easy, positive operation, yet is ruggedly built to take the rough abuse of day-in, day-out service.

Air-powered clamshell gate lets operator accurately windrow fill, aggregate or sand. Big twin cylinders close against the load. Optional cab-operated controls are widely used for fast, on-the-go dumping.

Cable-operated door-type gate is ideal for pit-dumping, plant-to-plant use and long-haul operations. Available with optional air trip or air rewind.

Manually-operated gate is ideal for pit-dumping or windrowing. Low in weight ... easily operated.

Transverse spreader gate is air-powered so that heavy, coarse materials like chips and gravel can be laid-down in eight-foot wide layers, to specified depths.

For specialized applications, Gar Wood has engineered rack-and-pinion models, as well as patented butterfly and split-butterfly gates.

Enclosed Hopper Provides Complete Weather Protection for Free-Flowing Materials

Bulk handling of any free-flowing material is a growing trend around the country. That's because it's faster, less costly and there's no chance of damage or loss from spillage or contamination.

With bulk hopper delivering you eliminate the time and cost of handling packaged materials through the many steps from source to end use. Hopper trailers let you load, haul and unload in record time ... let you schedule more trips per day and bigger payloads per trip.

The models shown above can be equipped with either permanent or removable aluminum domes. Loading hatches are fitted with vented, self-locking covers which allow free "breathing" yet keep water out. And with Gar Wood's patented butterfly gates, the load is completely protected from dirt, water and all weather conditions. These gates are engineered for fast, safe, fool-proof operation.

Enclosed Gar Wood Mono-Shell hoppers are also available as semi-trailer units and can be equipped with one, two, or three discharge gates. Semi-trailer models are compartmented both for fast, positive cleanout and for hauling different materials on the same trip without contamination.

Wide Variety of Bodies are Customized for Your State, Application

For half a century Gar Wood has been the country's leading builder of quality truck equipment. This experience is reflected in Mono-Shell hopper trailer design and versatility.

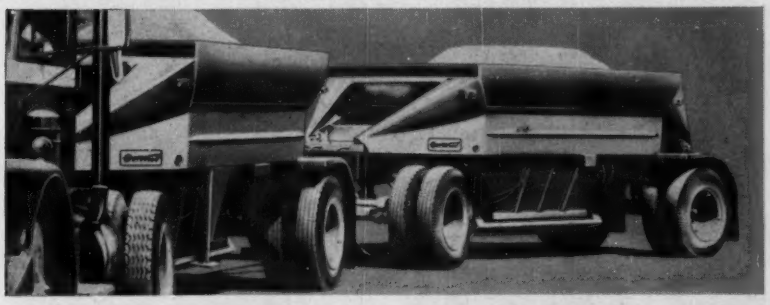
With standard body models, Gar Wood can customize a hopper trailer to your exact job requirements, and, just as important, to your state road-weight restrictions. You get maximum *legal* payloads for every application, with minimum maintenance and operating costs.

LOADS 23% OR MORE* WOOD HOPPER TRAILERS

New Hauling Method Drastically Reduces Operating and Maintenance Costs

WAYNE, MICHIGAN—Gar Wood Industries, world's pioneer truck equipment firm, announces a revolutionary new bulk material hauling method for contractors and contract truckers. Proved for the past eight years, in widely diversified applications throughout the West, the method utilizes hopper trailers designed and built by Gar Wood.

Immediate and most important advantage of the hopper trailer method is the fact that far greater payloads can now be hauled over the nation's roads and highways. Compared to conventional truck-mounted equipment, Mono-Shell hopper trailers let you increase legal payloads 23% or more per trip...even two or three tons more than other trailer methods. Examples of these extra payloads include 28½ tons in Ohio with Gar Wood double-train hopper trailers, and 26 tons in Florida with semi-trailer units.



Payload increases like these result from Gar Wood's exclusive Mono-Shell design which reduces tare weight, and from trailer design and mounting techniques that let Gar Wood distribute more weight over a much greater axle span. Thus, for the first time a manufacturer with nation-wide sales and service facilities is able to offer standard equipment that can be assembled to meet widely varying state axle-weight laws.

The Gar Wood hopper trailer method offers exceptional benefits to construction, sand and gravel, cement and other industries where bulk hauling is utilized. Increased payloads mean increased profits, and will provide an effective solution to the current cost-profit squeeze. Reduced cycle time and more trips per shift will result from faster loading and discharge operations.

The unique structural design of Gar Wood Mono-Shell units greatly reduces maintenance and repair costs while letting each truck or tractor rig haul more payload per original equipment dollar invested.

Proof of the many money-saving advantages made possible by Gar Wood's hopper trailer method is available through a payload analysis offered by local Gar Wood Truck Equipment Distributors.

*CHECK THE "HOPPER HAULING" PAYLOAD FOR YOUR STATE

WITH DOUBLE-TRAIN HOPPER TRAILERS

State	G-W Hopper Legal Load
Arizona	28 Tons
California	28 Tons
Idaho	28½ Tons
Michigan	**
Nevada	28 Tons
New Mexico	32 Tons
Ohio	28½ Tons
Oregon	27 Tons
Utah	29 Tons
Washington	26 Tons

WITH SEMI-TRAILER AND TANDEM AXLE TRACTOR

State	G-W Hopper Legal Load
Colorado	26 Tons
Illinois	24 Tons
Indiana	24 Tons
Iowa	24½ Tons
Kansas	21 Tons
Louisiana	**
Minnesota	24 Tons
Missouri	21½ Tons
Montana	24½ Tons
Nebraska	24½ Tons
North Dakota	24½ Tons
Oklahoma	24½ Tons
South Dakota	24½ Tons
Texas	24 Tons
Wisconsin	24½ Tons
Wyoming	25 Tons

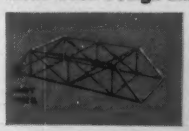
WITH SEMI-TRAILER AND SINGLE-AXLE TRACTOR

State	G-W Hopper Legal Load
Alabama	21½ Tons
Arkansas	21 Tons
Connecticut	21 Tons
Delaware	21 Tons
Florida	26 Tons
Georgia	22½ Tons
Kentucky	21½ Tons
Maine	21 Tons
Maryland	23 Tons
Massachusetts	21 Tons
Mississippi	20 Tons
New Hampshire	24 Tons
New Jersey	22 Tons
New York	23 Tons
North Carolina	23 Tons
Pennsylvania	21 Tons
Rhode Island	21 Tons
South Carolina	21 Tons
Tennessee	20 Tons
Vermont	21 Tons
Virginia	19½ Tons
West Virginia	20 Tons

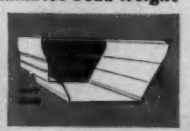
**Legal payloads in this state increase in direct ratio to reduction in equipment weight. Mono-Shell hoppers have lowest possible tare weight.

The above figures are based on data provided by the National Highway Users Conference, March, 1960, and are computed with standard heavy-duty tractors.

Mono-Shell Design Eliminates Dead Weight



Conventional design has heavy frame and cross braces that obstruct loading. Shell must still be added to this complex frame, increasing weight.



With Mono-Shell hopper design the contours of the body shell itself form all the required strength and support for a stronger, yet lighter body.

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan • Richmond, California

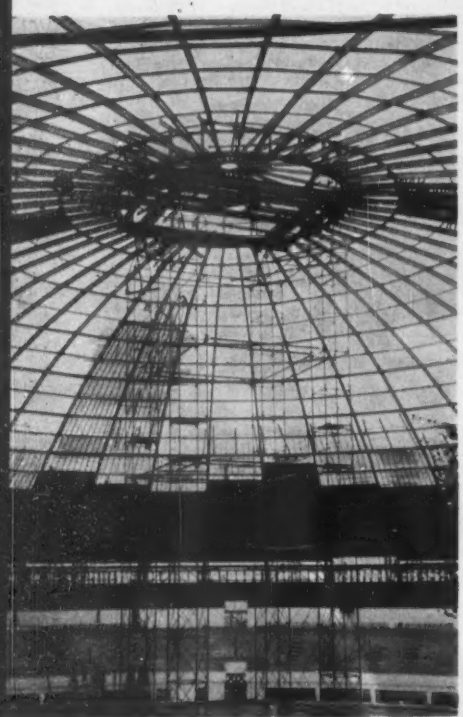
Construction 'Round the World . . .

In Italy

Working from a truck-mounted platform, crews install huge ventilating ducts as Italian miners advance toward the center of Mont Blanc. The system will cool the working area inside the tunnel, which sometimes rises above 110 deg F, and remove fumes from the blasting. Societa Italiana per Condotte d'Acqua is the contractor.

In Kenya

Two heavy, steam-operated pile drivers travel along temporary stagings during the construction of four new berths in Mombasa. Between them in the background is a light barge-mounted Sykes pile rig for driving piles that support the stagings. Christiani & Nielsen Corp. is building the harbor project for East African Railways & Harbors.



In the Philippines

Araneta Coliseum, claimed to be the world's largest dome auditorium, has a clear dia of 357 ft. The base of the dome is a steel tension ring supported by 48 concrete columns and linked to an inner compression ring by 48 steel ribs. Atlantic, Gulf, & Pacific Co. designed, fabricated, and erected the recently completed arena, which is located in Quezon.

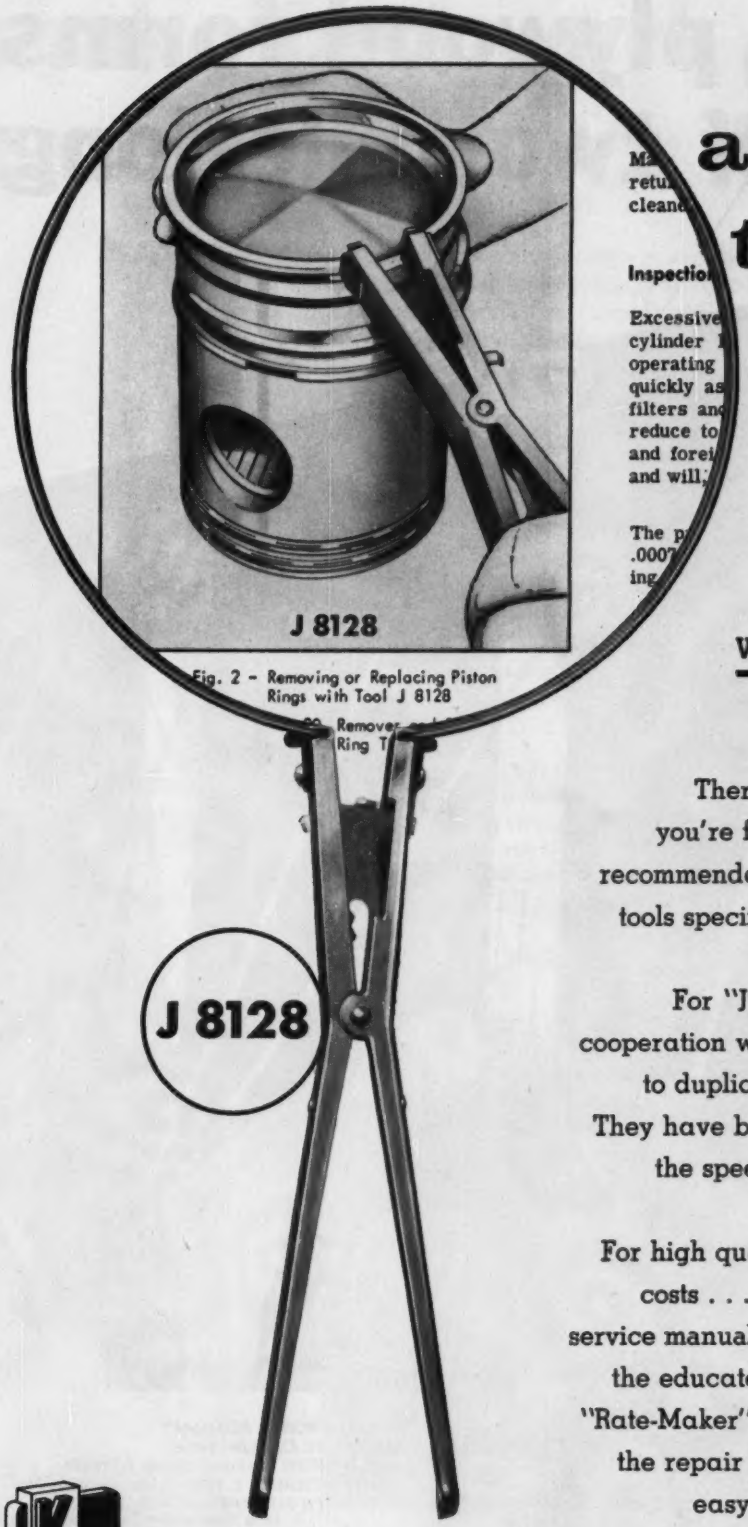


Fig. 2 - Removing or Replacing Piston Rings with Tool J 8128

from apprentice to service expert ...FAST!

With K-M special service tools!

There's no shortage of service skill if you're following O.E.M. service manual recommendations and using the "J" number tools specified in these service instructions.

For "J" number tools are developed in cooperation with the equipment manufacturer to duplicate factory assembly conditions. They have built-in ability to greatly increase the speed and skill of your service staff.

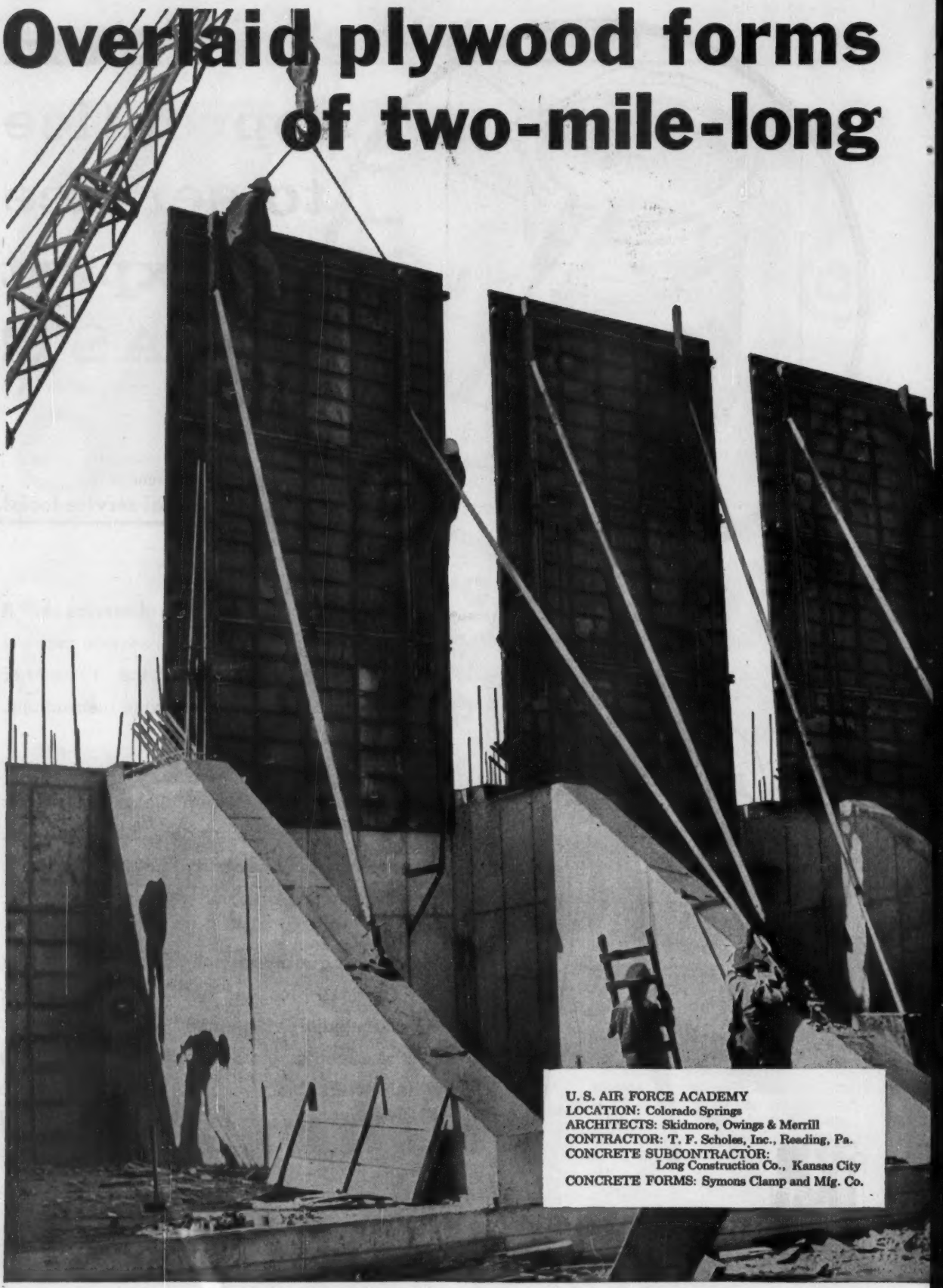
For high quality service jobs at lowest labor costs . . . look for the "J" number in your service manual . . . the number that designates the educated tool for the job; a Kent-Moore "Rate-Maker" tool specially designed to make the repair or service job simple, quick and easy without risk of damaging parts.

60-H2

KENT-MOORE ORGANIZATION, INC.

28635 MOUND ROAD, WARREN, MICHIGAN • ENGINEERS AND MANUFACTURERS OF SERVICE TOOLS AND EQUIPMENT

Overlaid plywood forms of two-mile-long



U. S. AIR FORCE ACADEMY
LOCATION: Colorado Springs
ARCHITECTS: Skidmore, Owings & Merrill
CONTRACTOR: T. F. Scholes, Inc., Reading, Pa.
CONCRETE SUBCONTRACTOR:
Long Construction Co., Kansas City
CONCRETE FORMS: Symons Clamp and Mfg. Co.

make fast work rampart at Air Academy

OVERLAID PLYWOOD CONCRETE FORMS did a big job in a hurry at the Air Force Academy in Colorado Springs. The 10,000 ft. retaining wall that bounds two sides of the raised campus was formed at the rate of 70 lin. ft. daily. Large plywood panel assemblies cut time and cost because of their high rate of re-use. And the overlaid plywood made a flawlessly smooth concrete wall to set the imposing buildings on a fitting pedestal.

Wall height varies from 15½ to 33 ft. Along most of its length, counterforts on 14-ft. centers connect it with an anchor wall 18 ft. to the rear. Each 70-ft.-long section was concreted in three pours: first, footings; second, anchor wall and the lower 13 ft. of both counterforts and main wall; third, upper portions.

Form components were Symons Steel-Ply forms—2x8-ft. panels of high density overlaid fir plywood, encased in steel frames 2½ in. thick. They were pre-assembled into large units, two panels high and six wide, and placed by crane or from traveling scaffolds. Overlaid plywood was specified to produce ultra-smooth concrete and for its high re-usability. The contractor formed 600,000 sq. ft. of wall with 37,000 sq. ft. of plywood and has used the same forms many times since.

ALWAYS SPECIFY DFPA-QUALITY TRADEMARKED PLYWOOD. Concrete form grades include: INTERIOR PLYFORM®—standard concrete form grade, made with moisture-resistant glue, gives multiple (up to 12) re-uses; EXTERIOR PLYFORM®—standard concrete form grade, made with waterproof glue, gives up to 25 or more re-uses; OVERLAID EXTERIOR PLYWOOD—special panel with hard, glossy resin-fiber surfaces—forms smoothest concrete, gives up to 200 re-uses.

DOUGLAS FIR PLYWOOD ASSOCIATION
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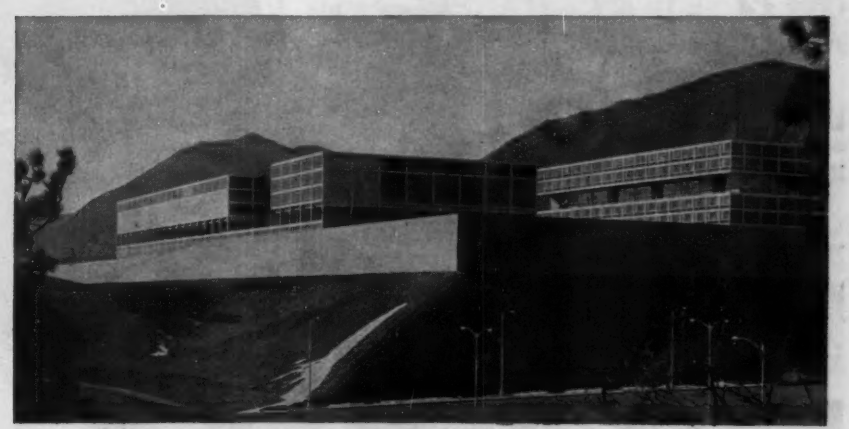
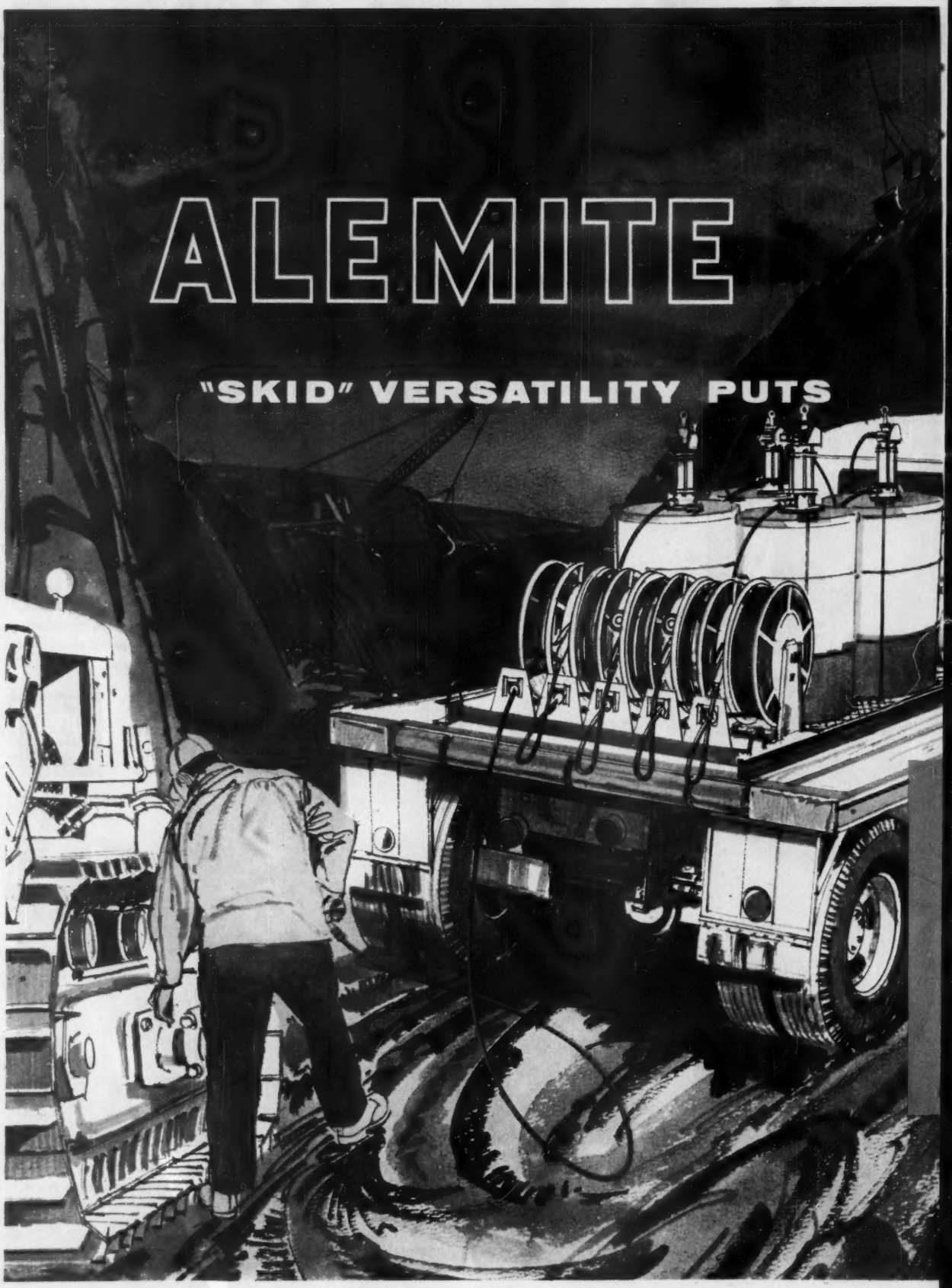
—a non-profit industry organization devoted to research, promotion and quality control

DFPA TESTED QUALITY



In design and material, the wall is architecturally harmonious with the raised geometric campus it encompasses. Overlaid plywood forms insured ultra-smooth concrete, and cut labor time because of rapid re-use.


ALEMITE
"SKID" VERSATILITY PUTS

You're looking at an Alemite Portable Service Station in action. The rugged, versatile Alemite four-pump, five-reel, 400-lb. drum, pressure-lube model that works on wheels – or takes to its skids on a "drop-off."

You save time and money because this Alemite Portable Service Station moves with the job . . . preventive maintenance checks "scrapers," "cats," "buckets" from a flat-bed truck or temporary "drop-off" station . . . on the spot.

Working equipment is properly serviced and back on the job in minutes. You reduce the possibility of serious breakdowns. Keep a tight schedule as a result.

MORE BITE IN THE BUCKET!

Choose from a complete range of Alemite Portable Service Station models that can be custom-tailored to your exact needs. Permanent-mounted or skid-type models that free multi-purpose trucks for "hot shot" duty. All are available with standard components for complete lubrication service.

Write for your free Alemite Portable Service Station bulletin . . . see how you can make important savings in time, money and equipment . . . on the job . . . today!

4 Basic Combinations of Alemite Portable Service Stations Offer New Flexibility for any spread!

Three Skid Models

2 pumps, 2 reels, 120-lb. drums • 4 pumps, 5 reels, 120-lb. drums • 4 pumps, 5 reels, 400-lb. drums

Permanent Mounted Models

4 to 6 pumps • Reels for up to 8 services • 400-lb. drums • Power Take Off • Fuel Tank • Drum Hoist • Pump Hoist • Flood Lights • Fuel Pump • Water Tank • Air Compressor • Tool Box • Work Step • All mounted on a universal truck bed.

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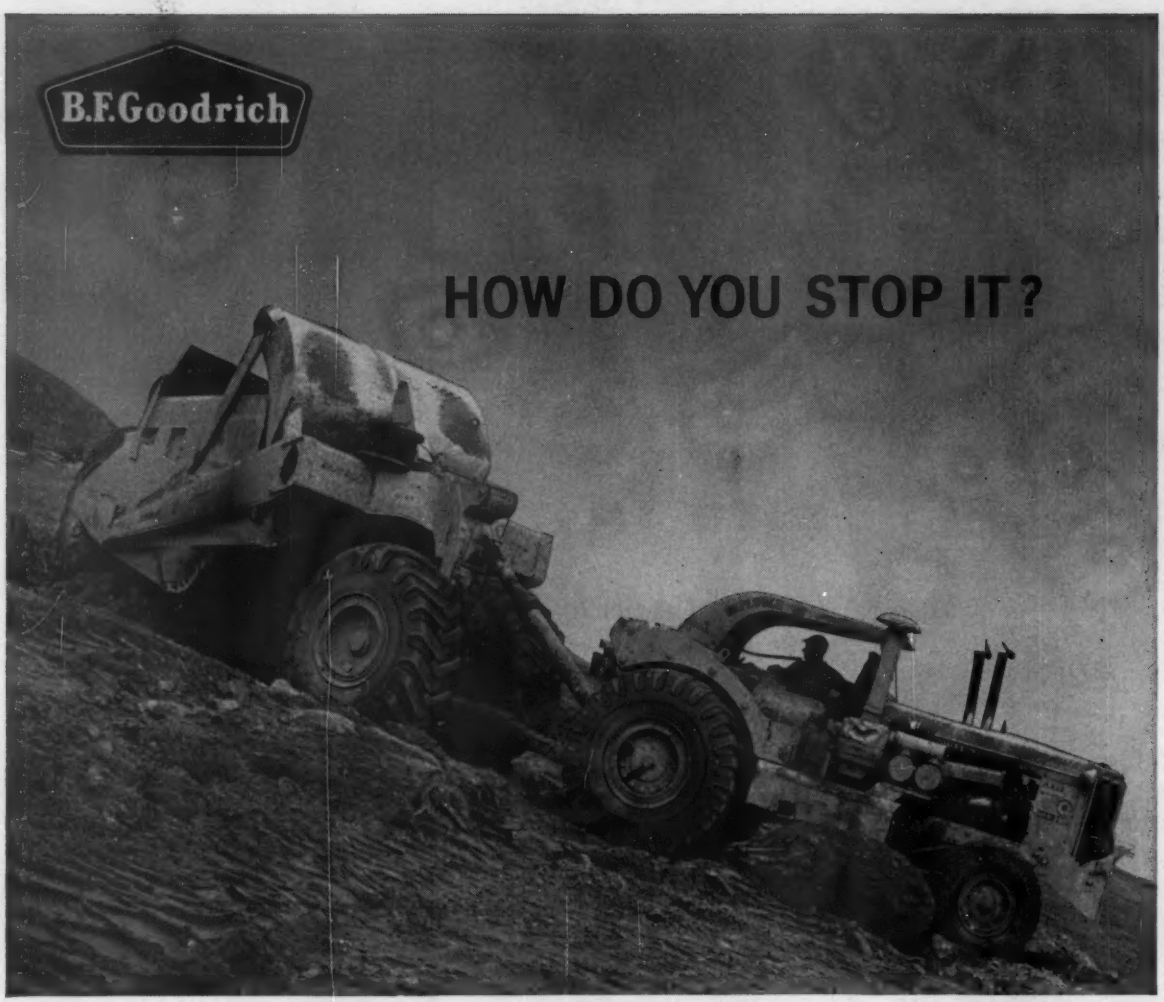

Hi-Torque brakes give uniform pressure, *full circle contact.* This provides maximum effective braking surface in the same size unit...double the braking power.

HI-TORQUE BRAKES!

B.F.Goodrich Hi-Torque brakes cut stopping distance approximately in half, compared to conventional two-shoe brakes tested on identical vehicles and loads. The added safety factor with these brakes means you can haul bigger loads more safely, operate on faster cycles. More difficult off-highway jobs can be tackled.

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B.F.Goodrich Hi-Torque brakes

Construction Methods AND EQUIPMENT

JULY, 1960

VOLUME 42 • NUMBER 7

HENRY T. PEREZ, Editor

Profitable Maintenance

IT'S NO NEWS to anyone in the contracting business that competition is fierce and that some bid prices are ridiculously low. Take common excavation, for example. The Bureau of Public Roads' price index for this item in the first quarter of the year was the lowest it has been since 1955. The same situation prevailed for concrete paving. Yet, obviously, not all low-bidder roadbuilding contractors are going broke. One reason is effective equipment maintenance.

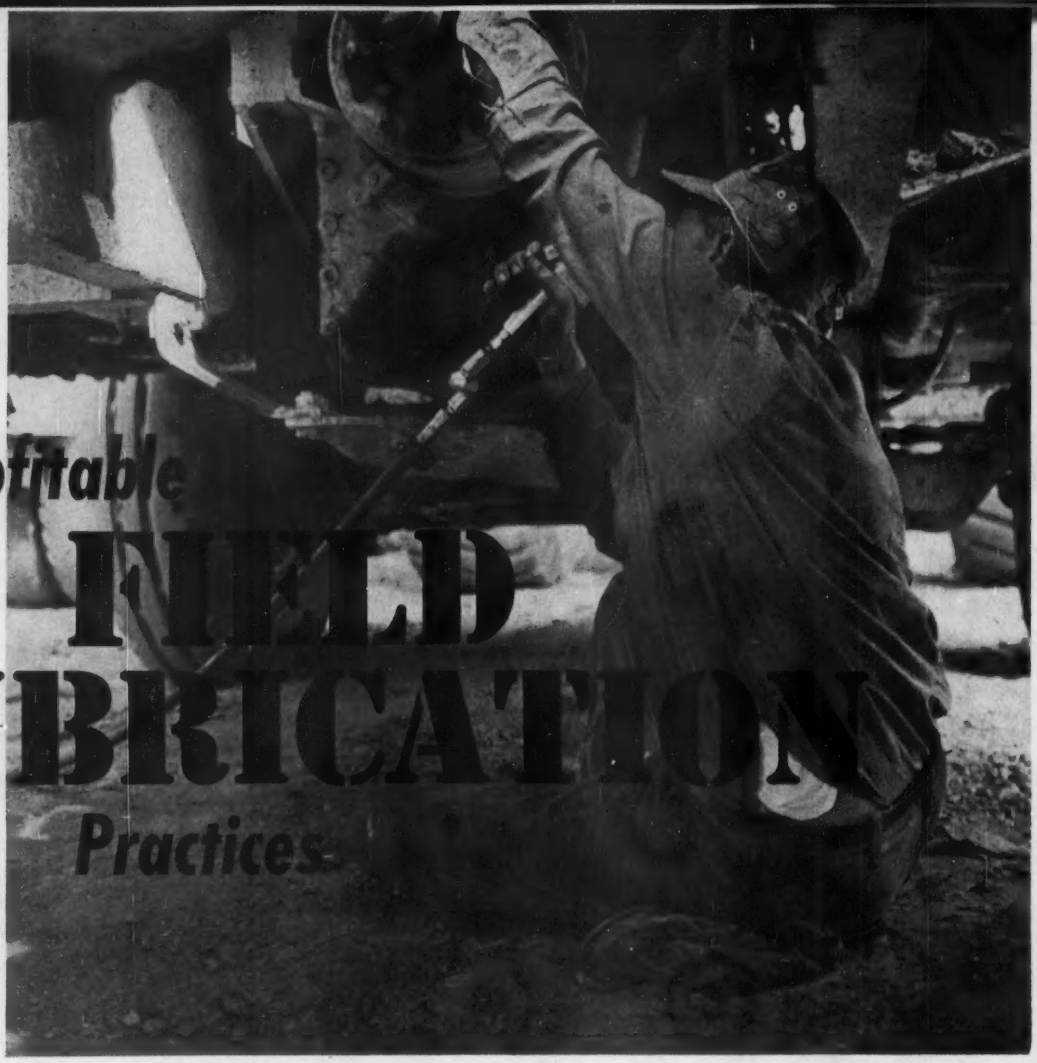
Cornerstone of any maintenance program is lubrication. Proper lubrication is vital if the contractor is to get out of a machine all the productive capacity the manufacturer has built into it.

Key to efficient and effective lubrication is the mobile lube rig that services machines in the field. If you haven't paid much attention to this item in the past, do so now. To help you, a special report on the following pages gives details from a survey of contractor practice in equipping and using this basic maintenance tool. Included in the report is an article detailing what manufacturers have to offer in the way of lubrication equipment.

Elsewhere in this issue you will find specific examples of how individual contractors make their equipment maintenance programs pay off. The projects vary from a $900,000 highway job in Vermont to a $98,000,000 powerhouse at Niagara. Maintenance facilities vary from a single combination lubrication-service truck to an extensive complex of field service and repair shops integrated with mobile units. Regardless of the size of your own operations, there are lessons to be learned from these maintenance-minded contractors.

Preventive maintenance has always played a vital role in the success or failure of any contracting operation requiring extensive use of machinery. Today it is even more important. Proper maintenance won't insure a profit, of course, but it will go a long way toward making your operations more successful.

To see how contractors across the country practice field lubrication, turn to the next page.



Profitable FIELD LUBRICATION Practices

A Special Maintenance Report by JOHN SILINSH, Assistant Editor

What's in a Lube Rig?

All mobile lube rigs are designed for the same purpose—to service construction equipment in the field. Practically all incorporate the following equipment:

1. Containers for lubricants, fuels, and water.
2. Clamps, rods, or cables to tie down the containers.
3. Pumps for dispensing the items in the containers.
4. Hose and reel assemblies and metering devices.
5. Air compressor.
6. Electric Plant.
7. Tool box and storage cabinet.
8. Miscellaneous tools, filters, fan belts, grease fittings, and adapters, as well as cleaning solutions, specialty lubricants, brake fluid, and antifreeze.

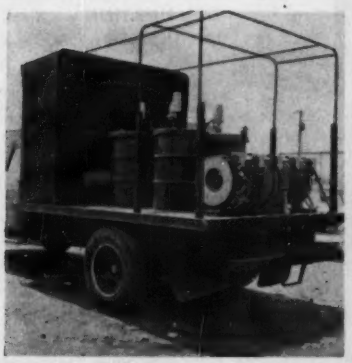
WHEN IT COMES to preventive maintenance and field lubrication, it seems, no two contractors think alike. Their lubrication programs and lube equipment differ to suit their individual attitudes toward maintenance and to fit their needs as dictated by their operations.

To find out how contractors handle lubrication, CM&E conducted a survey of construction companies across the country, as well as lubrication equipment manufacturers, their distributors, and other organizations concerned with equipment maintenance. What we found is discussed in the following articles.

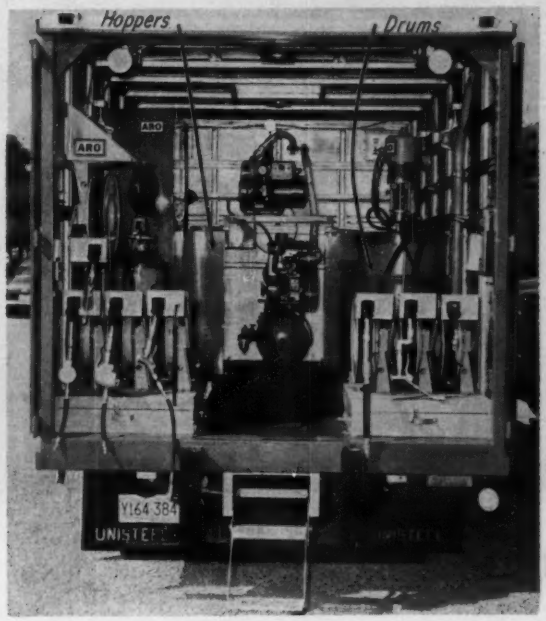
The type of work a contractor does is probably the most important factor in setting up a lubrication program and selecting the equipment for it. Roadbuilders and dam builders own and operate huge fleets of earthmoving machines that are on the move continually. Keeping them in top operating condition takes a lot of oil and grease, and the contractor's mobile lube rig supplying these items very often resembles a complete service station on wheels.

Building erectors and bridge builders, on the other hand, generally work in rather confined areas and have no need for elaborate mobile equipment. Most other types of operations fall somewhere between these two extremes, and the lubrication requirements vary accordingly.

ON-THE-SPOT SERVICE—Maintenance man lubricates a scraper at the job site. The heavy duty lube rig is equipped with Aro components and carries hoppers for lubricant storage.



CONTAINERS—Lube truck owned by McCloskey & Co. of Philadelphia carries drums. Rig at right has drums and hoppers.



CONTAINERS

Most lube rigs are equipped with individual drums that contain the various lubricants. Generally, these are standard size containers, so that replenishing lubricants become a simple matter of exchanging a full drum for an empty one.

The two most popular drum sizes are 120 and 400 lb. Practically every contractor owns crawler-mounted machines requiring large amounts of track roller lubricant, dispensed from a 400-lb drum. Chassis lube is another quantity item generally carried in 400-lb drums. But this is by no means a universal practice. Several contractors handling sewer and water line installation have found that 120-lb drums are sufficient for both track roller and chassis lube.

Other services such as engine oil, hydraulic oil, gear lubricant, and torque converter fluid usually are carried in 120-lb drums. Big contractors frequently use 400-lb drums for these services also.

Less popular than drums are tanks, or hoppers. These are either individual containers for each service or large tanks with a separate compartment for each lubricant.

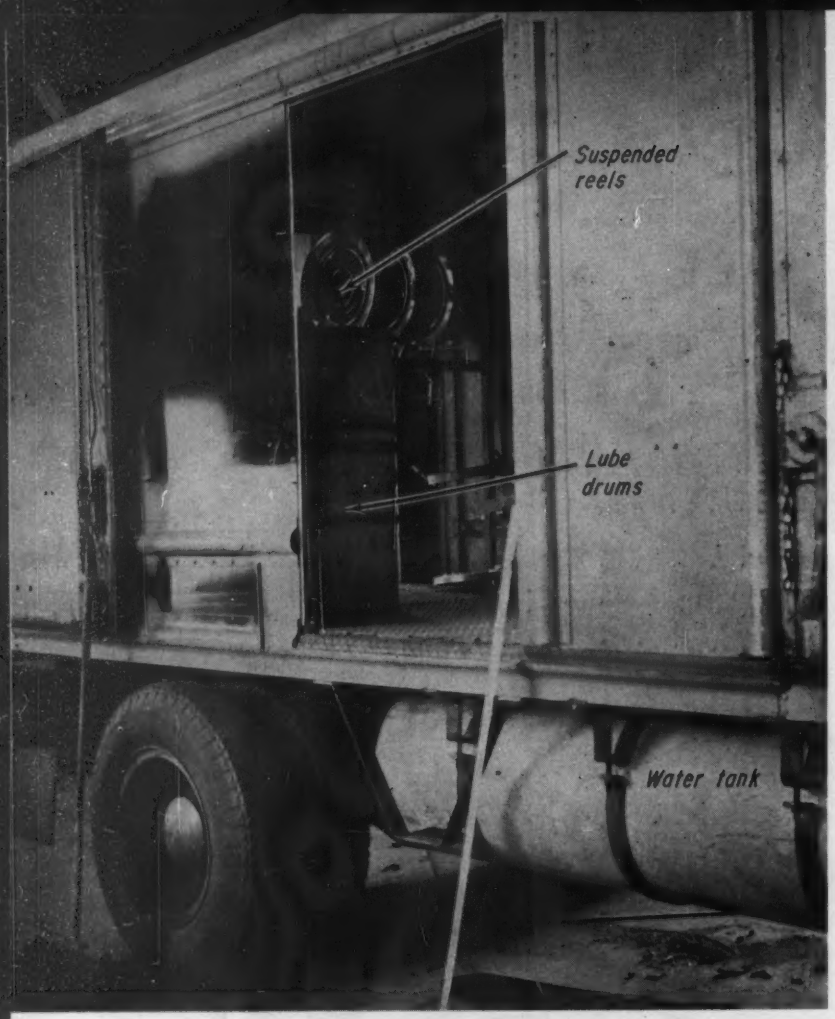
Hoppers present a neater appearance and take up less floor space than drums of equal capacity. But replenishing the lubricants requires one or more transfer pumps.

Another slight drawback in the use of hoppers is the lack of flexibility to meet changed lubrication requirements. With drums, changing lubricants is just a matter of substituting one drum for another. In the case of a hopper, it's more of a chore. The hopper must be emptied; this requires some other container for storing the leftover lubricant. Next, the tank should be cleaned and then refilled.

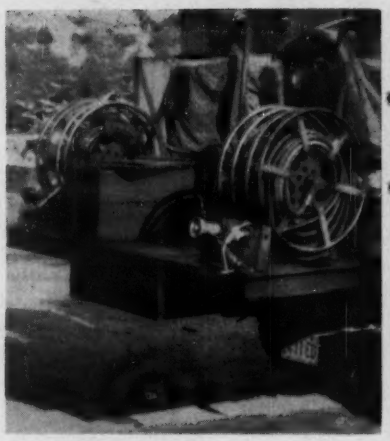
Larger contractors find this is no problem. Their lube rigs are equipped with as many as 10 or 12 or even more services and can meet various conditions without having to change lubricants. Several big contractors prefer hopper type containers; but a West Coast lube equipment distributor reports that contractors who have bought hopper-equipped government surplus units are converting them to the drum type.

Many contractors favor a combination of drums and hoppers. Items that can be pumped easily and are used in large quantities are carried in hoppers containing as much as 150 gal. Heavy lubricants such as grease are kept in drums to avoid pumping the viscous material when replenishing the supply.

Alcohol antifreeze and water often are carried in cylindrical tanks strapped below the truck bed. These



COMPACT RIG—Drums inside the van contain lubricants, while tanks under the truck bed carry water and alcohol. Suspended reels provide extra space on the floor. Franklin Contracting Co. of Little Falls, N.J., is assembling this lube rig.



COMBINATION — Small rig supplies four lubricants, air, and two fuels.

TANK TRUCK—Service platform on back of truck holds lube equipment.

FIELD LUBRICATION . . .

services are air-operated, but are accessible for refilling from the outside. Some contractors mount the water tank above the compressor or the truck cab and dispense water by gravity.

Specialty items such as solvents, special lubricants, and brake fluid are generally kept in small cans that are not equipped with any kind of dispensing apparatus. Water is often kept in army surplus 5-gal cans.

Not many contractors carry diesel fuel or gasoline on their lube trucks. But one contractor who does carry these items is Salvatore-Sons of Orange, N.J. Their lube rig carries 125-gal tanks for diesel fuel, gasoline, engine oil, and water. Gear oil and truck and chassis lube is carried in 120-lb drums. Most of their work consists of sewer construction and other types of underground installations, involving a lot of pumps and compressors. Their lube rig refuels this equipment in addition to servicing it on the job. But they also have found that a supply of diesel fuel comes in handy for priming a fuel system after a filter change. And gasoline also is used for washing filters.

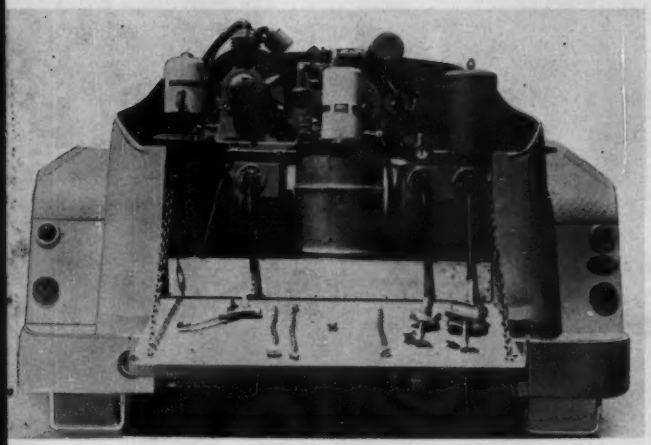
A different approach is taken by W. F. Wilson & Sons, a pipeline contractor of Brookeville, Md. Their lube rig is comparatively small, but carries 275 gal each of diesel fuel and gasoline in addition to four lubricants and air. Most of their equipment is mobile, but does not cover as much territory as that of an earthmoving contractor. And it is easier to take the fuel to the machines than to drive the machines to some refuelling station on or near the job site; hence their combination lube and fuel truck.

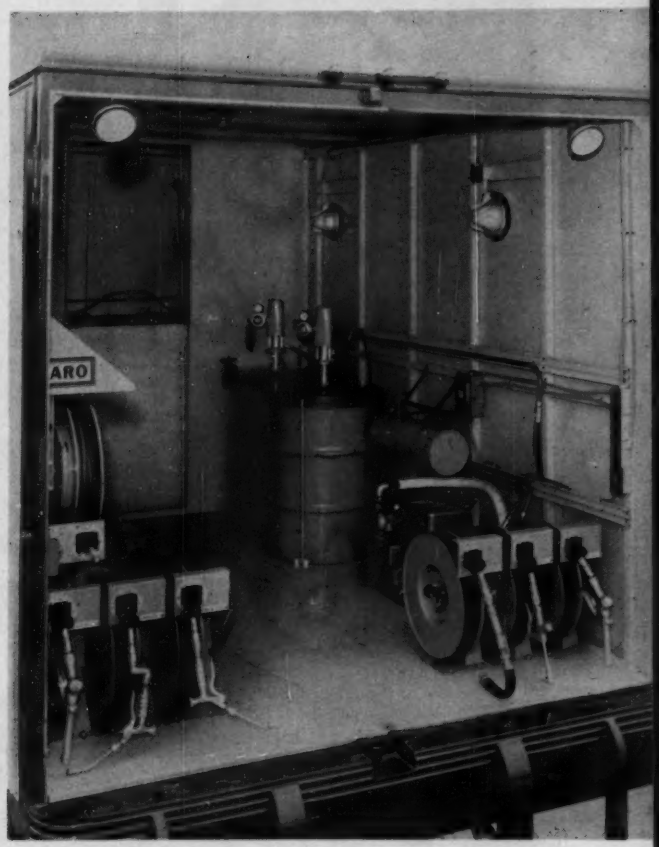
Similarly, a tank truck can serve as a combination rig. A lubricant platform can be mounted at the rear of the truck, or the tank shortened to make room for two or three lubricant services. This arrangement is handy for a contractor who needs large quantities of fuels but has simple lubrication requirements.

TIE-DOWN RODS

When drums are used, some provision must be made to anchor them to the floor of the lube unit. Various rods, clamps, cables and other devices are available for this purpose. Rods and clamps usually connect to the drum cover, anchoring the drum to the floor and securing the cover to the drum. Hold-down rods or clamps must be easily removable to permit the changing of the drums.

When hoppers or tanks are used, anchoring them to the floor is a simple task. These are permanent installations and are bolted, welded or otherwise attached to the truck.





PIPING—Flexible hoses connect to the pumps and hose reels. The supply lines from drums to reels are steel tubing.

PUMPS

Air-operated pumps dispense the lubricants. The pumps are designed to develop lubricant pressures as much as 50 times greater than the pressure of the input air.

High-pressure pumps developing up to 10,000 psi dispense chassis lube and other viscous and fibrous greases. Medium-pressure pumps handle semi-fluid and fluid products such as track lubricants. Low pressure pumps take care of fluid lubricants like gear lube and motor oil.

Transfer pumps are another stock item on most lube rigs and a necessity on hopper-equipped units. These pumps are high-volume units used for refilling containers or for dispensing fuels or water.

Viscous greases, or operations in cold climates, lower pumping capacities. Then some sort of aid is required to insure an adequate amount of material at the pump intakes. This is usually a follower plate that fits around the pump and against the wall of the container. The follower rests directly on top of the lubricant and often depends upon gravity to make it follow the lowering lubricant level. Air or mechanically operated installations are advantageous in that they develop a slight pressure and boost the pumping capacity.

HOSES AND REELS

On most lube rigs, flexible supply hoses carry the lubricants from the containers to hose reels equipped with a control valve or a metering device. Flexible hoses throughout the rig are almost standard practice on drum-equipped units that are mounted on open flatbed trucks or trailers. When removing pumps and drum cover to change drums, the flexible hose can be moved aside easily.

Hopper-equipped rigs on open flatbed bodies generally have flexible hoses too. But a few lube units are equipped with steel tubing for the supply lines. The choice between steel tubing or flexible hose depends primarily upon the location of the various components on the truck. If the supply line can be installed without obstructing the floor, steel tubing is preferable because it presents less of a maintenance problem and never has to be replaced.

On either hopper or drum type rigs with an enclosed van body, steel tubing is more popular because it can be mounted along the walls of the van without obstructing the floor. Connections at the pump and at the reel are usually flexible hose regardless of what material the supply line is made of.

The flexible hose contained on a reel can be of any length up to the capacity of the reel. Hose

FIELD LUBRICATION...

lengths range from 15 to 50 ft. The shortest hoses are used for water, gasoline, and diesel fuel. These are anywhere from ¾ to 2 in. in dia. Hoses about 25 to 30 ft long are popular for engine oils and gear lube, while chassis grease requires the longest hoses to reach all parts of a machine being serviced. Hose diameter for most lubricants is ½ in., but chassis grease usually comes through a ⅜-in. hose. Many contractors have standarized on one hose length for all services; in one case it is 100 ft throughout the unit.

Reels generally are equipped with a spring-loaded device that retracts the hose when not in use. These reels also incorporate a brake that keeps the hose from retracting while in use. Some contractors prefer to coil the hoses manually. The best example of this is S. J. Groves & Sons Co. who own a number of large lube rigs with manually coiled hoses.

Control valves for the various products are generally either of the squeeze type or equipped with a trigger handle. They may or may not have a metering device. When meters are used, those on oil valves generally register in quarts; gear oil meters are calibrated in pints.

AIR COMPRESSOR

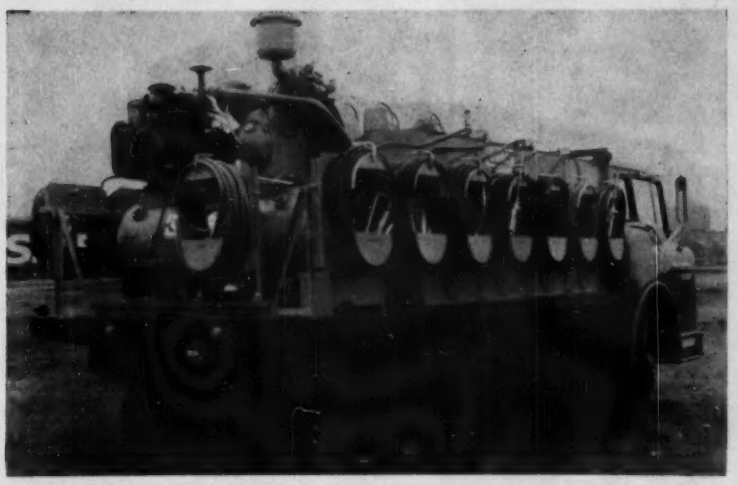
Practically all lube-rig air compressors are driven by a separate engine, generally gasoline powered. Size of these units varies to match the size of the rig and to take care of any other needs the lube truck is designed to service, such as tire inflation.

If the compressor's primary duty is to supply air to the various dispensing pumps, a fairly small reciprocating compressor is adequate. For this purpose, compressor sizes range up to about 50 cfm developing pressures up to 200 psi. Maximum horsepower rating is about 15.

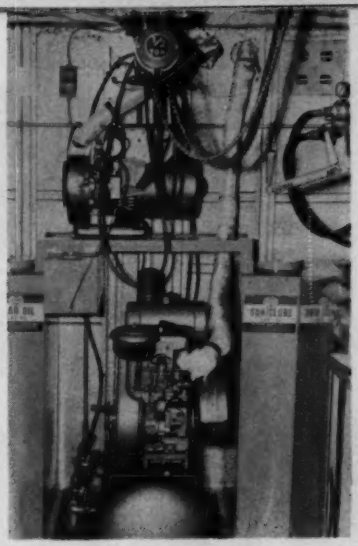
Contractors who use only one lube service at a time can get along with a unit rated at 10 hp or less and delivering about 20 cfm. But using several services simultaneously requires a bigger compressor. Some units deliver up to 100 cfm and operate a variety of small air tools in addition to powering the dispensing pumps.

A few contractors prefer to have their compressors driven by the truck engine through a power take-off. This arrangement leaves a little more floor space for other purposes and eliminates a separate motor, but running the truck engine to produce compressed air is an expensive proposition. But a pto-driven compressor installation is handy for the smaller contractor who has a small number of machines scattered over several job sites and served by one lube rig. That's because the air pressure can be built up in a receiver while the truck is on the road.

One lube equipment distributor reports that the



MANUALLY COILED HOSE—S. J. Groves & Sons Co. equipped this rig with manually coiled hoses. The unit carries Graco lubrication equipment.



AIR AND LIGHTS—Compressor and electric plant are stacked to save space.

REELS—Rig owned by Thos. M. Durkin & Sons, Inc., of Philadelphia, is equipped with self-retracting, individually mounted Lincoln reels. The services are identified clearly to avoid misapplication of lubricants.

ROOMY RIG—The truck engine on this Alemite lube rig drives the air compressor through a pto. The air tank is mounted under the truck bed.

trend seems to be away from the conventional compressor, driven either by its own engine or by a pto. Instead, they are turning to the air-brake type compressor units belt-driven by the truck engine. These installations share their cooling and lubrication systems with the truck engine and considerably cut down on maintenance.

If a lube rig is enclosed, and the compressor is driven by a separate engine, a 2 or 3-in.-dia hose is necessary to duct the exhaust out of the van.

Compressor starting systems vary from a simple, manual unit to an automatic system that starts the engine whenever there is an air demand. A popular starting method is a manually actuated, remote controlled, electric starter that can be operated from some easily accessible spot on the outside of the rig. This is especially handy for compressors located in hard-to-get-at areas of the lube rig. It's also a matter of safety and convenience. Climbing on the rig, and over and around lubricant containers and other installations is a lot of trouble. Besides, oil and grease sometimes spill on the truck floor, making for some rather slippery footing.

ELECTRIC PLANT

Unlike the compressor, which is a necessity on every lube rig, the electric plant is more of an optional item. But about four out of every five lube rigs carry this installation. Most electric plants deliver 1,500 w at 115 v, ac. Bigger units are quite common, but smaller ones are rare.

Many contractors service their construction machinery at the end of the working day. During most seasons this calls for artificial lighting, generally supplied by the lube rig's electric plant. Other operators carry the electric plant only for emergency lighting purposes and can get along with a rather small generator. Emergency lights also can be hooked up to the truck's electrical system.

Those who don't have any electric plant have made the choice for one of several reasons. Some small contractors find that they can take care of their field lubrication by servicing one rig at a time during daylight hours at the job site.

Some big contractors who do service their equipment at the end of the day have a number of portable, high-capacity electric plants, again eliminating the need for lights mounted on the lube rig.

Starting systems for electric plants are similar to those on compressors. Practically all automatic and remote controlled starters on compressors and electric plants operate on current from the truck battery. Some of the newest and fully automatic installations are so arranged that the truck battery is recharged while the electric plant is in operation.

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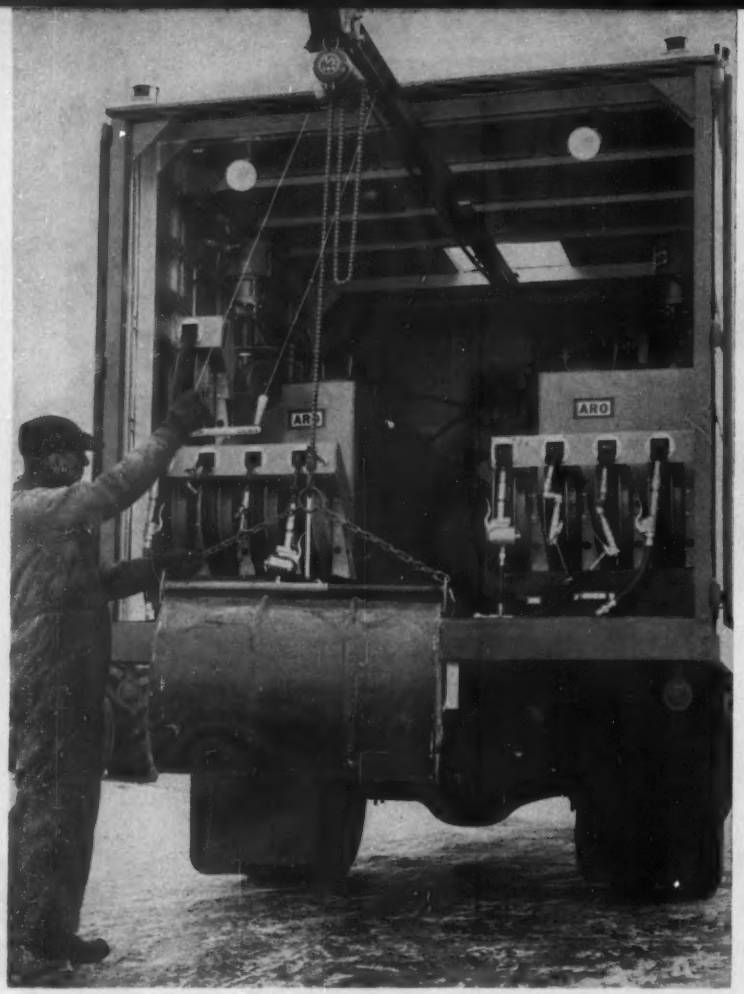
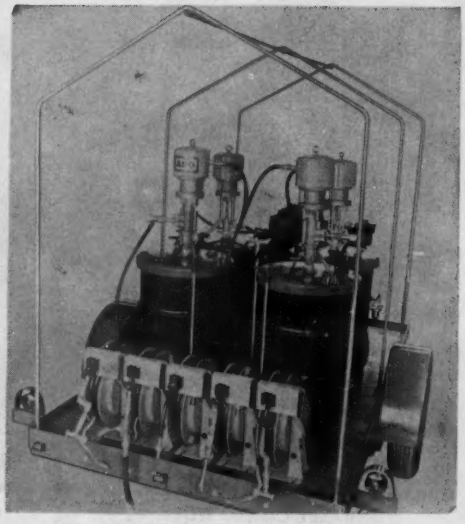




LUBE TRAILER—A small, two-wheel trailer carries four lubricants and an air compressor and is light enough for towing by pick-up trucks.

AIR HOIST—A handy device for lifting full lubricant drums into the truck is an air-operated hoist that travels on an overhead rail.

FIELD LUBRICATION...

STORAGE SPACE

Tool boxes and storage cabinets often are built to fit any available space left on the lube rig after all other equipment is in place. Some trucks have nothing more than a box or a bin to hold whatever happens to be necessary at the moment. Others have storage cabinets with compartments to hold a great many service items.

The selection of tools carried on a lube rig usually is small. Most contractors who operate a well equipped unit restrict it to lubricating only. For mechanical repairs there is a separate truck—with one or two mechanics assigned to it. But small contractors often find that their lube rig turns out to be an all-purpose service truck.

MISCELLANEOUS EQUIPMENT

This list could be endless, covering items ranging from big-capacity welders to water coolers and coke machines, and from blow torches to coffee makers and first-aid cabinets.

Specialty lubricants generally are carried in small containers—about 5 gal or less. They are dispensed by gravity if they are fluid or by some type of a hand pump if the material is viscous. Very often these items are carried in their original containers, especially if the containers are expendable, such as tubes, tin cans, or cartons. Brake fluid, cleaning solutions, and antifreeze are handled in a similar way.

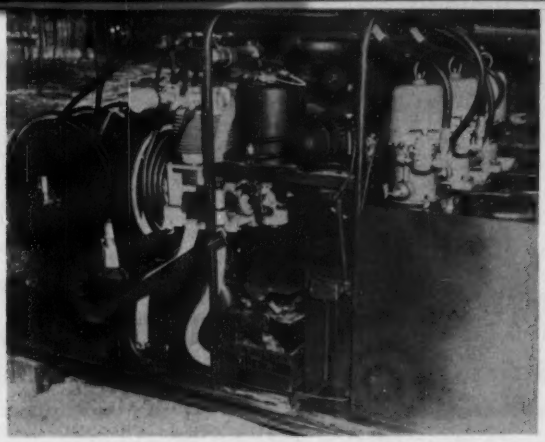
Some contractors like to have a welder on the rig for on-the-spot repairs that do not require precision work. A welder is also handy for hardsurfacing at the job site. But most often the welder is part of the mechanic's truck or the general purpose service rig.

In cold climates or cold seasons, a blow torch is useful for thawing out frozen linkages, chains, and crawler assemblies before starting up the equipment in the morning. Generally, blow torches, too, are more likely to be found on mechanic's trucks.

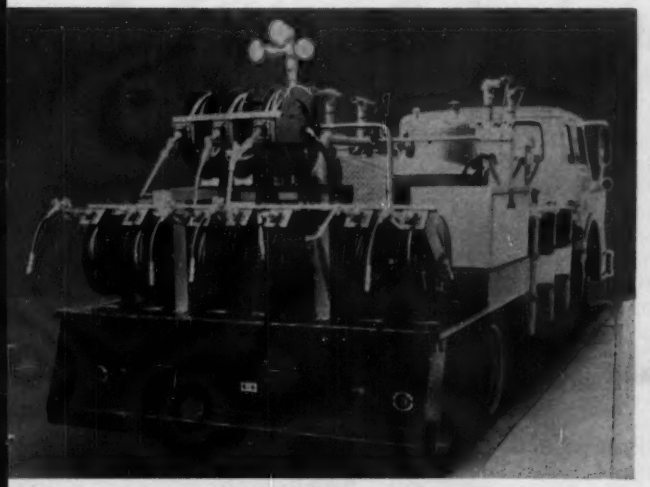
Water coolers are a popular item. They offer refreshment to the maintenance men and lubrication engineers as well as the equipment operator whose machine is being serviced during the working day. Coke machines are more of a luxury, but a few can be found on some big lube rigs.

Up in Maine a contractor installed a coffee maker —with a purpose. He serviced his equipment one at a time during the working day, and the coffee maker gave the equipment operator a coffee break while his rig was being serviced. Others have done likewise.

First-aid cabinets or kits round out the list of popular items on the lube rig. A first-aid kit is a good idea, but often it is shoved into some corner of a storage cabinet or placed in any available



SKID MOUNTING—Corps of Engineer's lube units are semi-permanent service stations.



MODIFIED TRUCK — The step-down truck bed makes it easy to load full drums. The rig carries Lincoln lubrication equipment.

nook or cranny on the floor and may be hard to find in an emergency. Contractors who go to the trouble of equipping their lube truck with first-aid equipment should make it accessible from the ground outside the truck.

Fire extinguishing apparatus should be a required item for any lube rig, but too many lack it. The power unit for the compressor and the generator certainly are constructed so as to present no hazards, but accidents do happen. One contractor had a lube rig with a self-starting arrangement for the compressor engine. The system went haywire, and a spark from the solenoid switch started a fire that destroyed the installation, though the truck was not a complete loss.

Lifting devices are handy for moving drums and for lifting the drum covers and pumps off empty drums. Various air hoists are used for this purpose. On van type rigs or on rigs with a frame and a roof, an overhead rail can be installed to support an air hoist. The rail extends beyond the end of the truck so full drums can be lifted without obstructions. Davits and small cranes also are popular. These are movable and can be set to operate from several different stations on the truck.

About one out of every ten lube trucks is equipped with a two-way radio.

Last but not least—something for the record. It's good business to keep maintenance records, and some provision should be made to keep the charts and check lists clean while not in use. A simple flat drawer is sufficient for this purpose.

TRUCKS, TRAILERS, SKIDS

Once the components of a lube rig have been selected, the contractor has to install them on a carrier. And here, practically anything goes as long as it's big enough to carry all of the necessary lube equipment and accessories.

Trucks are by far the most popular carriers, representing about 90% of all portable lubrication rigs. Trucks are of practically every imaginable size and configuration ranging from light pick ups to rugged army surplus 6x6's.

About 2/3 of all lube trucks are rated at a 2-ton capacity. Quite a few are larger, with 2½ tons being a popular size. But only a few rigs are mounted on trucks with 1½ or 1-ton capacities or less. Some lube rigs are mounted on Jeeps.

Most of the trucks ride on two axles (about ¼ have three axles) but nearly half of all units are equipped with front-wheel drive. This is especially true in the case of earthmoving contractors, who frequently encounter wet soil or mud.

Most trucks are flatbeds with an open body, but about one out of every seven units is an enclosed van. Many of the open-body rigs are equipped with a frame to which a tarpaulin cover can be attached for protection against weather and dust.

Some open-body trucks are modified flatbeds, with portions of the floor close to the ground. This simplifies the handling of lubricant drums.

Most trailer-mounted rigs ride on two wheels and are fairly small units. They seldom provide more than four lube services, plus air. They are light enough to be towed by a pick-up truck and are handy for many small contractors.

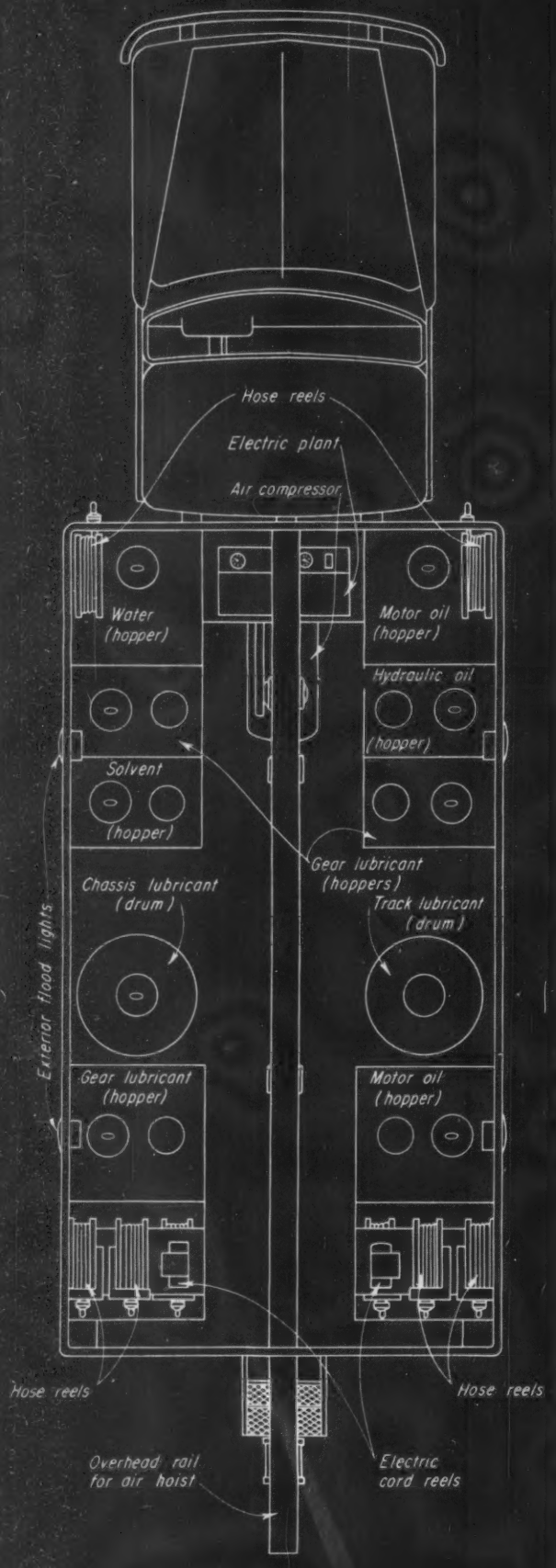
Four-wheel trailers also find some use on construction sites, but the percentage is small. They're good for the contractor who needs a mobile lube rig but does not want to tie up a truck for this purpose. A farm or utility trailer will do, and the unit will be just as useful as a truck-mounted one if it does not have to be moved between jobs too often.

Mounting a unit on skids may have a dual purpose. Some contractors prefer to have skid-mounted rigs that can be placed on a truck and hauled about just like a truck-mounted unit. The advantage here is that the lube equipment can be removed easily, making the truck available for other purposes.

Other contractors find that lubrication can be performed satisfactorily at a permanent or semi-permanent lube station on the job site. They use a skid-mounted rig, move it out to a job site on a truck, and place the lube unit on the ground, again making the truck available for other uses. This type of lube arrangement is probably most useful on earthmoving jobs where equipment can be driven to some central servicing point. If necessary, the skid-mounted rig can be hooked up to a tractor and pulled short distances to service equipment scattered about some parking area. A skid-mounted rig is a pretty good bet for the small contractor whose lubrication requirements vary from time to time.

For information on buying lube rigs and on standardized lubrication programs turn to next page.

How to Buy



SUGGESTED LAYOUT—Manufacturers custom-design their lube rigs from basic layouts for units of different sizes. This one is a suggested plan for a big Aro lube van equipped with an air compressor, electric plant, and air-operated drum hoist.

AS THE VARIETY of contractor-owned lube rigs would indicate, manufacturers of lubrication equipment have not been able to come up with standard models that will suit all tastes. Most manufacturers have suggested designs for lube rigs assembled from their components, and oil companies have tried to simplify lubrication programs, yet it's practically impossible to find two lube rigs that look alike.

"Lube trucks vary as much as women's dresses and for the same reasons—purpose or usage, size of operation, type of equipment serviced, number of units serviced, available truck or used components, and price." This is the feeling of the Haire-Murray Co., Inc., a distributor for Graco lubrication equipment in Fresno, Calif. They also add: "Everyone from the boss to the grease monkey has different ideas of what is necessary and at what price. Factory built units, with us, have not been the answer. We have sold only one such unit and had some conversion on this."

These comments just about sum up the situation that lube equipment manufacturers, their salesmen, and oil companies are up against. The result is a long list of components that can be assembled in any conceivable combination and still work effectively.

The contractor who knows exactly what his lubrucation requirements are, can easily design his own lube rig and assemble it in his own shop from components purchased individually.

FREE ADVICE

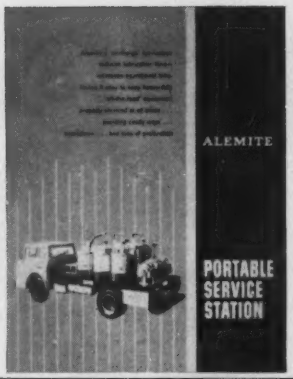
Expert advice on lubrication is available to any contractor who is not sure of his lubrication program or who wants to make improvements in it. Oil companies and lube equipment manufacturers employ lubrication engineers whose experience and training are available to the contractor for the asking.

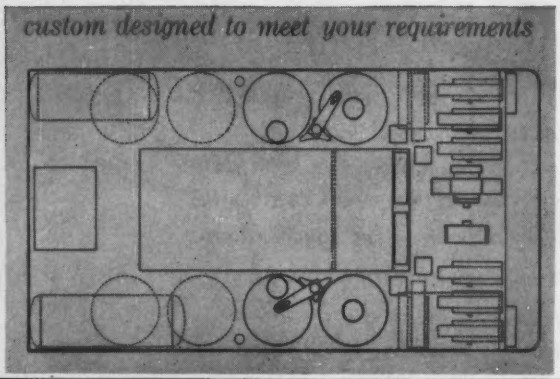
Despite the role these engineers play in setting up lubrication programs, they never have been able to come up with a "standard" lube rig that will satisfy

The contractor who knows his lubrication needs can have practically any lube rig custom-built to his specifications. But if he's not sure of what it'll take to service his equipment, the manufacturers will design a rig to service his needs. And there's expert advice available from the oil companies, too.

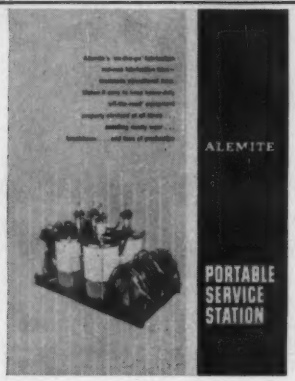
A Custom-Built Lube Rig

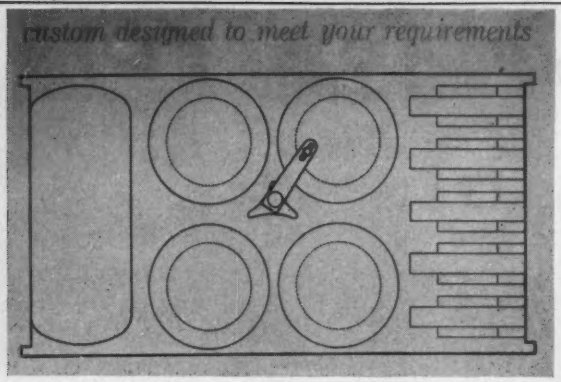
CUSTOMER'S CHOICE—Yonkers Contracting Co. of Yonkers, N. Y., equipped their truck with drums and Alemite components for six lubricant services and air. A light, tubular frame on the truck can be covered with a tarpaulin for protection against dust.





Catalogs Show Basic Designs To Help You Plan Your Rig





PLANNING A RIG—Once the size of a rig is selected, the necessary components are fitted into a basic plan suggested by manufacturer.

FIELD LUBRICATION . . .

all contractors operating under similar conditions. And the lube equipment manufacturers have just about given up trying to sell factory assembled lubrication units. Instead, they have developed various simplified methods of selecting components for lube rigs that are custom-designed to suit the contractor.

Aro Equipment Corp., of Bryan, Ohio, has a thorough method of analyzing the contractor's requirements and matching their lube equipment to his needs. Aro supplies the contractor with a work order sheet for each lubricant service desired. The sheets list all of the types of equipment and accessories available for that service. They name the component, give its size or capacity, the number of units required, and any other pertinent information. All the contractor has to do is to check the proper places on the work order sheet, and Aro takes it from there. Their engineers prepare a suggested layout to fit the contractor's truck or to fit one that will be purchased with the lube equipment. Their layout is based on either a heavy duty or a medium duty rig with a van type body.

Accompanying the layout is a bill of materials with prices. From there it's up to the contractor. If the price is right, Aro will assemble the rig and deliver it as a unit, or the contractor may prefer to assemble it himself. Of course, not all lube rigs are sold this way, and Aro will sell individual components piece by piece.

The Gray Co., Inc., of Minneapolis, has a different approach. They have developed a few suggested lube rig layouts to suit varying contractor requirements. These basic units are complete assemblies that can be used as is, but most contractors find that some modifications are necessary to adapt the rigs to their specific needs.

The H & R Roller Co., a Graco distributor in Albany, Ga., says: "We have sold over thirty of the Gray Co. Convoy Lubers . . . We have five units with one contractor and four with another and with the exception of the basic unit sold originally, none of the nine are alike in arrangement or appearance." And that's how it goes all over the country, regardless of manufacturer—the contractor makes the final decisions as to what will go where on his lube rig, and the result is a custom-built unit.

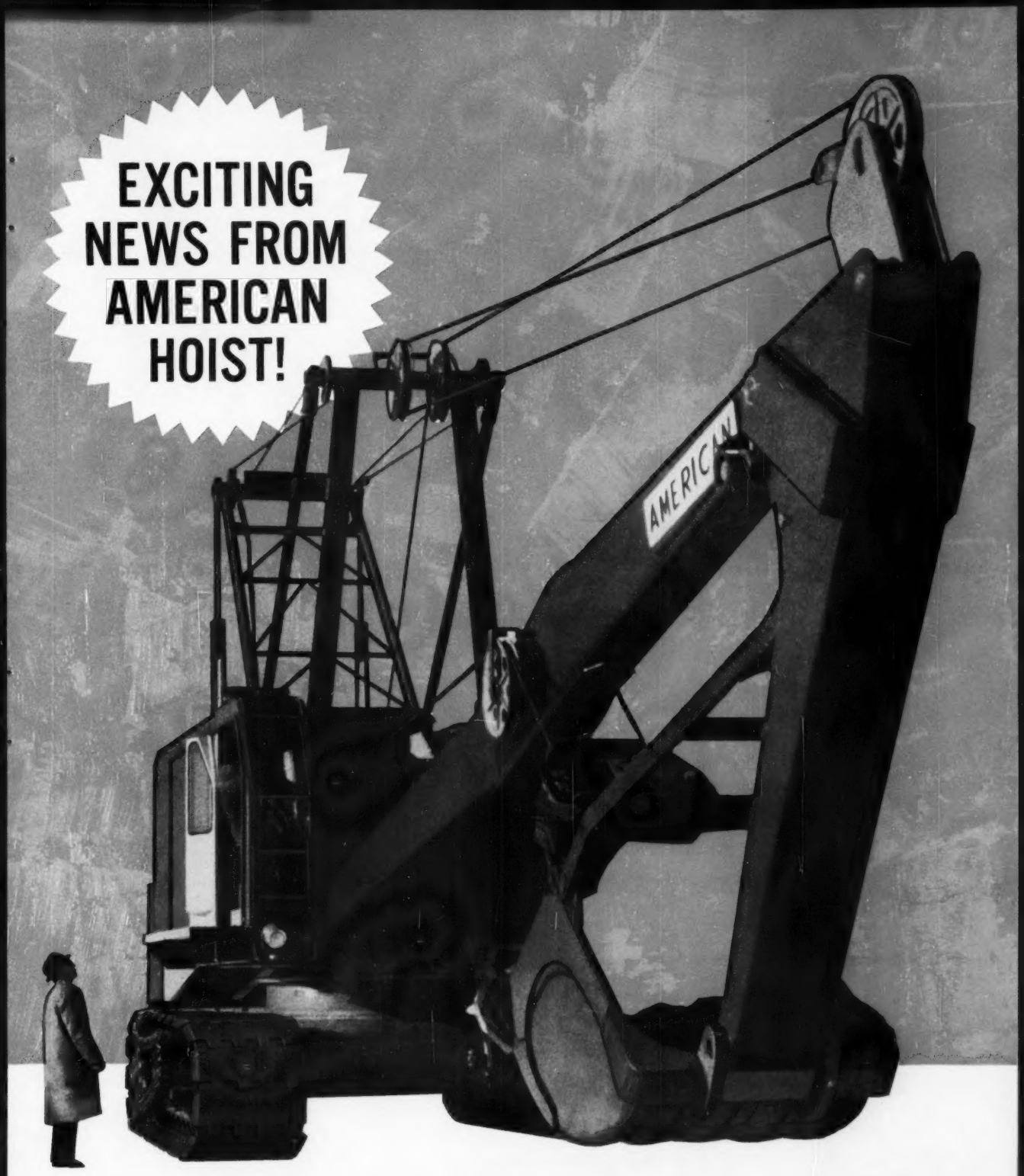
Alemite Div. of Stewart-Warner Corp., Chicago, has three basic units: One is truck-mounted, and two are skid-mounted. From these the final portable service station can "vary all over the map" according to Alemite.

Work sheets are a part of this selling technique, too. The Alemite salesman and the contractor can select the equipment and indicate it on a work sheet showing various floor plans. The contractor also gets engineering drawings for his use in assembling the rig or for the use of any fabricating shop the contractor may prefer.

Lincoln Lubrovans and Lubmobiles take shape in a similar manner. The St. Louis manufacturer adapts one of several basic designs to the buyer's specifications.

Balcrank, Inc., of Cincinnati has so-called "standard models" of Mobile Lubers in eleven different sizes and arrangements. But their equipment can be assembled piece by piece just like any of the others.

continued on page 102

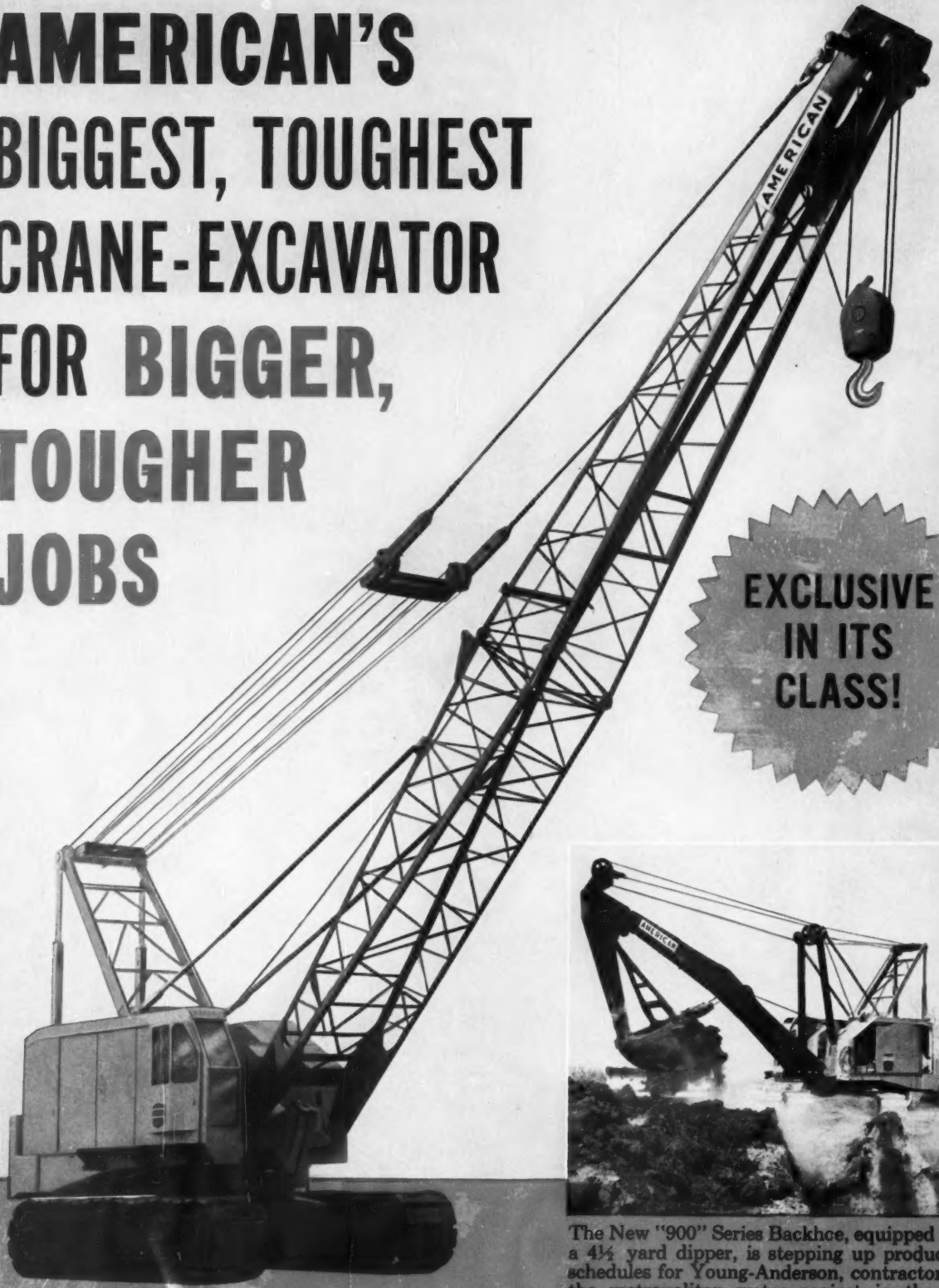


AMERICAN CONTINUES TO LEAD THE EQUIPMENT FIELD

NEW "900" SERIES CRANE-EXCAVATOR

3½ - 4½ Yards / 110 Ton Capacity

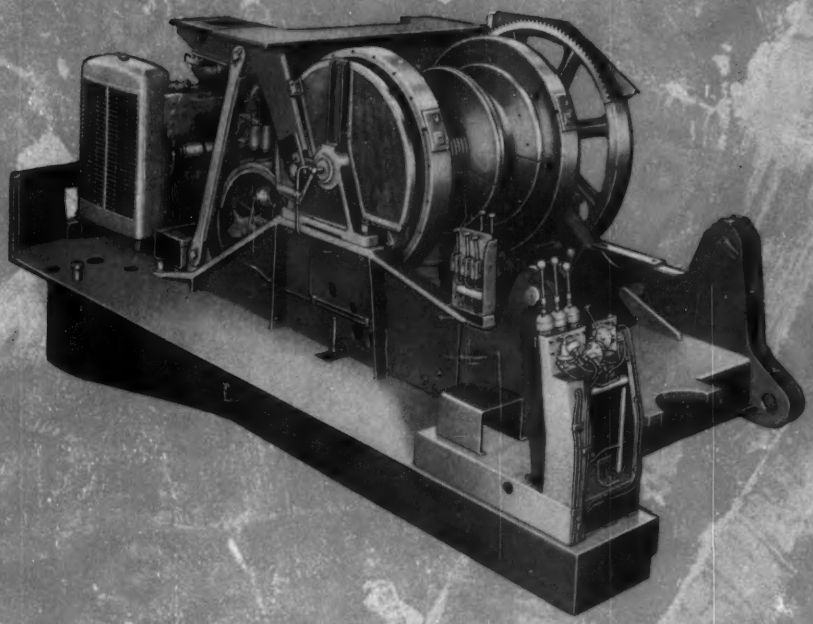
AMERICAN'S BIGGEST, TOUGHEST CRANE-EXCAVATOR FOR BIGGER, TOUGHER JOBS



EXCLUSIVE IN ITS CLASS!

The New "900" Series Backhoe, equipped with a 4½ yard dipper, is stepping up production schedules for Young-Anderson, contractors on the metropolitan water project in the San Francisco-Oakland Bay area.

Engineered from tracks to boom tip to withstand severest shock and strain.
American builds 'em better . . . so you can finish faster.



Most Rugged Machinery Deck in its Class

Jig Bored, Drilled and Machined . . . Perfect Alignment of Shafts, Drums, Gears and Bearings

Oversize Brakes and Clutches

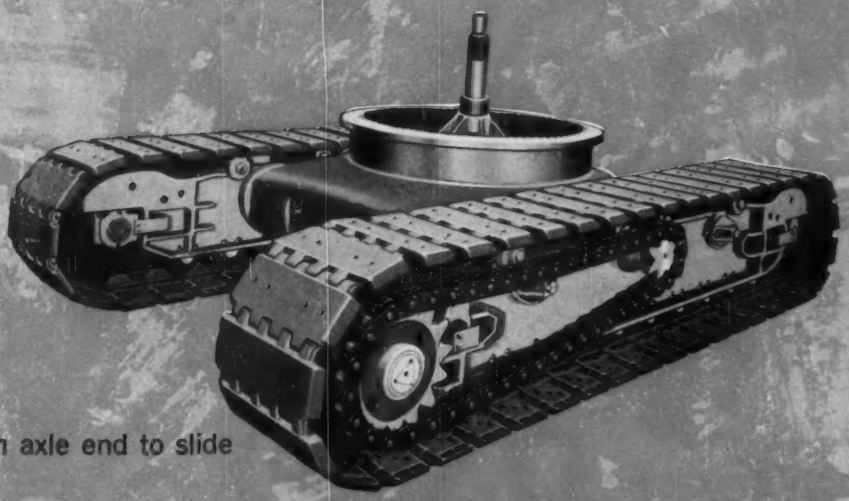
All Drum and Shaft Assemblies Individually Removable

Look at these outstanding "900" features!

Deeper, More Rugged Single Piece Carbody, Cast Alloy Steel

Full 18" Ground Clearance

Easiest Machine to Ship for its Size:



Remove only one bolt at each axle end to slide off side frames.

PLUS

AMERICAN'S FAMOUS JOB-PROVEN, JOB-PROFIT FEATURES!

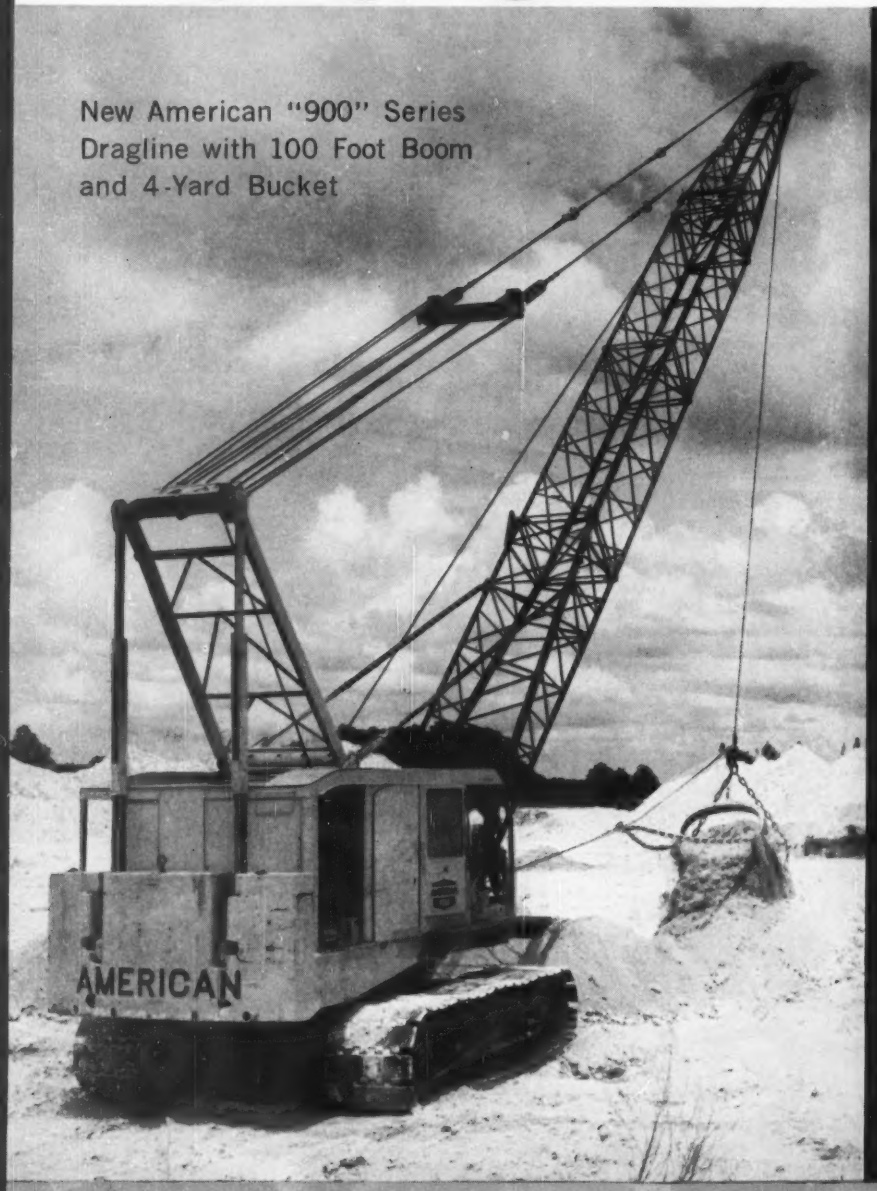
Tandem Band Clutches . . . Anti-Friction Bearings on Constantly Rotating Shafts and Drums . . . Smoothest Operating Boom Hoist in the Business Ultimate in Swing Smoothness . . . Graduated Air Controls

"900"

AMERICAN "900" SERIES

Built For . . .

LONGER REACH
BIGGER LOADS
GREATER PRODUCTION



New American "900" Series Dragline with 100 Foot Boom and 4-Yard Bucket

3 Crane Booms

Up to 270′ in length, plus jib.

Designed for high reach steel erection and long boom dragline work

3½ Yd. Shovel or Backhoe

Other capacities and various sizes to fit specific requirements.

Get all the extra money-making details on the Industry's Newest Crane-Excavator . . . NOW!

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Excavators-Cranes
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Handling Equipment

Locomotive Cranes
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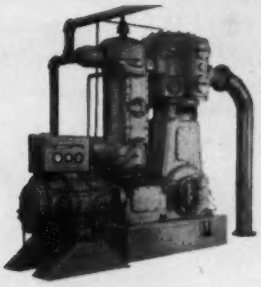
Revolver Cranes
to 400 tons

Printed in USA

Which... ATLAS COPCO COMPRESSOR

meets your needs best?



AR Heavy-Duty Compressors

More air per horsepower than any comparable compressor! For continuous, full-load operation. "L" angle, 2-stage, double acting. Water cooled. Standard models provide 382 to 3210 cfm free-air delivery at 100 psi; only 76-590 hp required! (Can be supplied for other working pressures on request.)

What's your compressor requirement? Need an installation large enough to provide air for all your needs? Or would a small, compact unit for auxiliary operation solve your immediate problem? Either way—and for a wide range of applications between these extremes—Atlas Copco has the compressor for you!

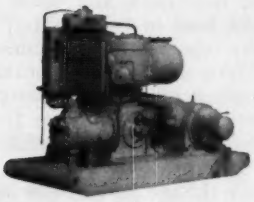
No matter which you choose, you'll get these proven advantages from Atlas Copco:

(1) More air per horsepower—less power consumption than other comparable units!

(2) Really low maintenance (one example — $3.10 after 10,000 hours' operation)!

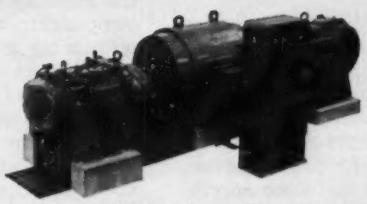
(3) Specifications are guaranteed free-air delivery — you get exactly what you order!

Get all the facts now—and compare! The coupon below will bring you a free catalog. (No obligation, of course.)



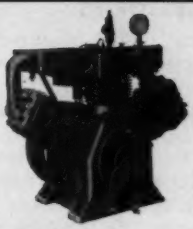
AR-L Heavy-Duty Compressors

Same basic construction as the AR Series, but provided with an air-cooled intercooler and air-cooled radiator for the cylinder water. Fan on compressor flywheel cools radiators. Perfect for arid areas or where difficult to bring in water. Both stationary and skid-mounted models available.



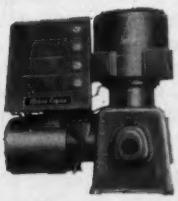
TWIN-AIR Rotary Screw Compressors

Brand new! "Twin-Air" Compressors offer capacities from 6,900 to 19,400 cfm at working pressures up to 115 psi. And, you get completely *oil-free* delivery of air or gas, since no lubrication is required — timing gears maintain small clearances between precision-mounted rotors, eliminating friction (and the necessity of oil) in compression chamber.



CT Air-Cooled Compressors

Stationary, or skid-mounted compressors for use where air demand is between 50 and 300 cfm. Totally air-cooled. Cylinder arrangement designed for smooth, vibration-free operation. Compact, rugged—for continuous, 24-hour trouble-free service. Highly efficient; low on maintenance costs.



ER-6 Heavy-Duty Compressors

New! Fundamental improvements over conventional heavy-duty compressors reduce power requirements (18.3 hp/100 cfm at 100 psi, full load); provide totally enclosed design; and save on floor space. Capacities to 1,140 cfm; standard instruments and safety devices.

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STANDARDIZATION — The C. F. Replogle Co. mounts all rigs on Army 6x6's. Using one design for all rigs simplifies maintenance.

FIELD LUBRICATION...

ACCESSORIES

Most of the manufacturers build only lubrication equipment; compressors and electric plants are supplied by some other source. Contractors often have compressors on hand that can be incorporated in the rig. Graco is the only lube rig manufacturer that also builds air compressors. But here again, a contractor may specify some other make of compressor, especially if he needs a big unit for some specific purpose. The lube equipment company can incorporate practically any compressor or electric plant into the final unit.

Van type bodies are handled in a similar way. The manufacturer will provide one if the contractor specifies it, but it will be built by some other firm. Most of the lube equipment manufacturers' basic designs include only the layout of the components, and the addition of a van will not change this.

USED EQUIPMENT

Unlike most construction equipment, used lube rigs are seldom available. The components have fairly simple designs and are not subjected to constant wear and tear like production machines. Some lube equipment has been in use over 25 years.

Compressors and electric plants wear out faster than other components. But they are easy to replace, making the rig as good as new. Hoses also need occasional replacements. But they are a minor item.

On many units, the various components are of different ages. Years ago, the contractor may have started with a fairly small business and a small lube rig. As his business grew or changed, so did his lubrication requirements. When his needs outgrew the capacity of his original rig, he took the usable components, added a few new ones, and came up with a rig that could take care of his needs. This sort of procedure may have repeated itself a number of times over the years. Many a lube truck contains equipment built by just about every manufacturer in the business. The result is maximum use from every lube component and a minimum market in used equipment.

But a few used rigs do change hands now and then. Probably the best supplier of used lube equipment is the Corps of Engineers. Many contractors have bought a variety of these rigs and, with a few modifications, adapted them to fit their lubrication programs.

One important consideration in buying a used lube rig is the ease or difficulty with which the unit can be modified. Chances are that the rig will come close to meeting the buyer's needs, but a few changes will be necessary. Many a rig is laid out or assembled in such a way that changes cannot be made easily without extensive rebuilding. Modifying such a rig can be expensive, and by the time the conversion work is completed the unit may have cost the contractor more than a brand new one.

SIMPLIFIED LUBRICATION

"Experience has indicated that over 90% of the equipment in service can be lubricated with two lubricating oils, two greases, and a gear oil." This comes from a Texaco LUBRICATION magazine article describing a simplified lubrication plan developed for contractors. The plan is aimed at reducing the number of lubricants the contractor has to

SynchroTouch Transmission Control—optional on DW21 and DW20 Tractors.

NEW CAT SYNCHROTOUCH TRANSMISSION CONTROL STEPS UP PRODUCTION 10 TO 15%!

THE JOB: Site improvement for Marple-Newtown Jr. High School, Pa. Clearing and grubbing... cut and fill... moving 40,000 cu. yd. of dirt to level area around the school.

CONTRACTOR: Hugh Boyd, Inc., W. Conshohocken, Pa.

EQUIPMENT: Two Cat DW21G-470B units with SynchroTouch Transmission Control and one Cat D8H Tractor with Power Shift Transmission.

When this picture was taken, the job was 25% ahead of schedule. Owner Hugh Boyd gave most of the credit to his new Caterpillar equipment. He said: "The SynchroTouch Transmission Control on the DW21s increases production 10 to 15% due to faster operation and less operator fatigue. The Power Shift Transmission on the D8 cuts operator fatigue 30%, permits smooth contact with the scraper and takes it out of the cut in third gear with no hesitation to shift."

Have you checked what SynchroTouch Transmission Control can do for you? To shift gears, the operator simply dials the desired gear for automatic, split-second response. A standard foot clutch is used *only* when starting from standstill. Results: faster shifting for faster cycles and more payloads per hour. Lessened operator fatigue for more daily production.

Compared with previous models, the new 345 HP two-wheel DW21G and four-wheel DW20G Tractors deliver 12% higher rimpull producing up to 20% faster travel speeds under similar haul road conditions. Their new LOWBOWL Scrapers (470B and 456B, respectively) are rated at 19.5 cu. yd. struck; 27 cu. yd. heaped. With optional SynchroTouch Transmission Control, they're designed to move more dirt faster and cheaper than any competitive unit. Ask your Caterpillar Dealer to show how he can step up production for you!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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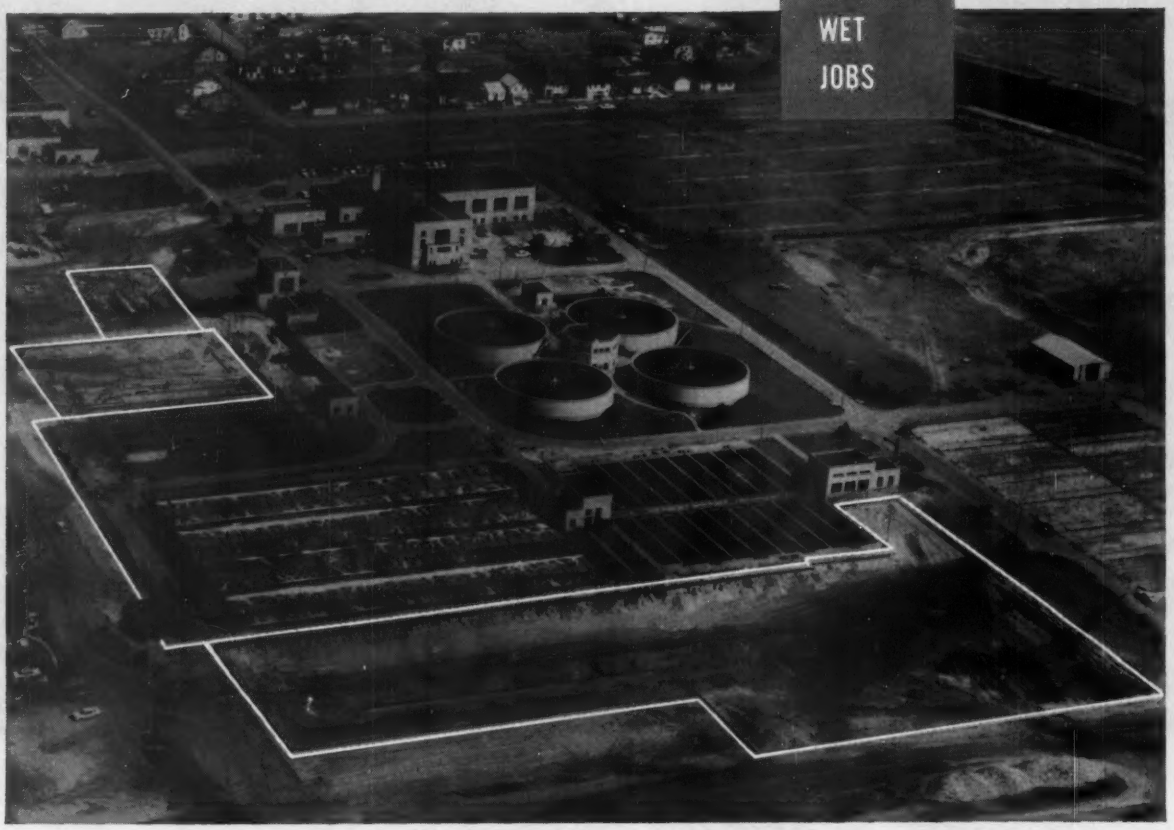
BOOST PRODUCTION WITH SynchroTouch TRANSMISSION CONTROL

Project: Sewage Treatment Plant Extension, Bay Park, N. Y.
Contractor: Hendrickson Bros., Inc., Valley Stream, N. Y.

HOW TO HANDLE WET JOBS



6-ACRE PLANT ADDITION DEWATERED FROM ONE CENTRAL PUMP STATION

Economy of operation was imperative in dewatering the above-pictured job site, which is located on water-logged Long Island's tidal flats. Hendrickson Bros. called for a well-point system which would predrain 3 separate areas, totaling more than 6 acres, from one central pump station.

• On many previous occasions, including the dewatering for the main plant at this same location in 1950, Hendrickson Bros. had successfully handled difficult wet work with Griffin equipment.

• Griffin was called upon to design and build pumps with extra air-handling capacity. With these pumps, operating from a single pump station, one wellpoint stage lowered 19 ft of ground water throughout the main excavation area. That's *low*-cost dewatering—by Griffin.

GRIFFIN WELLPOINT CORP.

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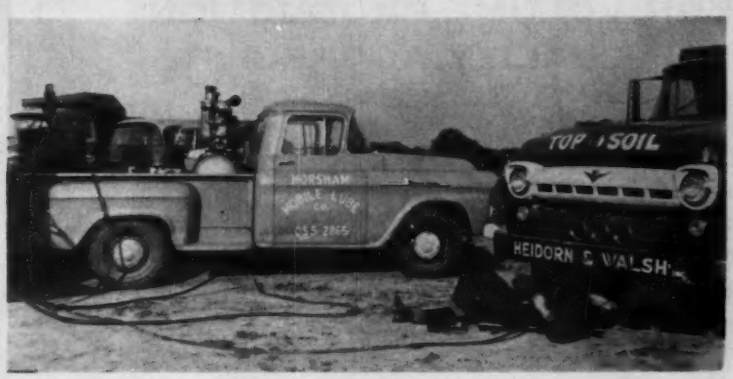
BRANCHES: HAMMOND, IND. • HOUSTON, TEX. • NEW YORK, N. Y. • JACKSONVILLE, FLA. • WEST PALM BEACH, FLA.

In Canada: Construction Equipment Co., Ltd., Toronto • Montreal • Edmonton • Vancouver
In Venezuela: Drew Bear & Sons C.A., Caracas • Maracaibo

25th YEAR

SERVICE ON WHEELS—A lube truck of the Horsham Mobile Lube Co. of Horsham, Pa., services equipment at the job site or in the yard at the contractor's convenience. Horsham's trucks are outfitted to handle routine lubrication and oil and filter changes.



SMALL RIG—Simple lube rig with only a few services handles truck lubrication. The lube equipment is mounted in a pick-up truck and can travel easily between jobs. Horsham sends one man with their small rigs, but assigns two men to handle the bigger servicing jobs.

FIELD LUBRICATION...

stock and at standardizing his lubrication program. Here are the six ingredients of Texaco's plan:

1. *Heavy duty diesel engine oil.*
2. *Heavy duty gasoline engine oil.*
3. *Premium quality hydraulic oil.*
4. *Gear oil.*
5. *Multi-purpose grease.*
6. *Track roll lubricant.*

This plan is simple enough, but Texaco engineers hasten to add: "Although the above products will cover the majority of equipment, there are always exceptions which must be provided for in any program." Before any contractor adopts a simplified lubrication program, it's a good idea to get some expert advice on the subject.

Many equipment manufacturers and contractors feel that a specific lubricant is necessary for a specific job. These people maintain that it takes a great many lubricants to service all of the different parts that make up a construction machine, and their lube rigs handle a dozen or more services.

Simplified lubrication plans have some advantages. Only a few lubricants are used, and handling and storage are reduced considerably. Also fewer lubricants reduce the chance of misapplication.

Standardization also can be practiced by a contractor in a different way. If he has two or more lube rigs, it is to his advantage to make them identical. Once his maintenance men familiarize themselves with any one of the rigs, they will also be experts on all of the others. This reduces the time that might be needed to train the man on several units. The components will all be similar and readily interchangeable in case of a breakdown.

The C. F. Replogle Co., of Circleville, Ohio, owns a number of lube rigs. All of these are similar and are built on Army surplus six-wheel-drive GMC trucks. Replogle has found that standardization helps cut maintenance costs (*CM&E, Apr., p 291*).

MAINTENANCE TO ORDER

If a contractor doesn't want to bother about lubrication, he can have someone else do it for him—if he's in the Philadelphia area, that is. The Horsham Mobile Lube Co. of Horsham, Pa., makes a business of lubricating equipment in the contractor's yard or at his job site.

It's a fairly new idea in construction equipment maintenance. Horsham services all types of trucks, transit-mixers, tractors, and fork lifts. They do not handle earthmoving equipment at present, but their business has been growing steadily and they may service these machines in the future.

Six trucks make up their servicing fleet. Three of these are lube trucks, one carries washing equipment, one is for general repairs, and one for deliveries. Now they are adding a fourth lube rig.

Their services include lubrication, oil changes, filter changes, grease fitting replacements, and routine attention to brakes, generators, starters, carburetors, and other components. All of their operations are accomplished at the owner's convenience, usually at night or on weekends.

To see how one lubrication-conscious contractor assembles and services his rigs turn to the next page

Make more profit on the jobs ahead with...

SYMONS® CONE CRUSHERS

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These dramatic views of sections of the important new Illinois Tollway system serve as an outstanding example of the vast contributions to the progress of mankind being made by the construction industry. In huge construction projects such as this, specification aggregate has assumed an increasingly important role. To meet the constantly growing demand for vast tonnages of quality aggregate used in concrete and bituminous highways, Symons Cone Crushers are today, more so than ever before, the first choice of leading producers throughout the world. Symons Cone Crushers are also used in sand preparation operations.

For in aggregate and sand production . . . *as in all of the great ore and industrial minerals operations the world over* . . . no record equals the performance of Symons Cone Crushers that have so consistently produced, economically and efficiently, great quantities of finely crushed product resulting in higher profit per ton per hour.

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Symons Cone Crushers, in Standard and Short Head types, are the choice of leading contractors and producers for primary, secondary and finer reductions in all types of aggregate operations. Available in sizes from 22" to 7' in diameter, for capacities from 6 to 900 or more tons per hour.

FOR PORTABLE PLANTS

Symons Cone Crushers are being used in increasing numbers for portable and semi-portable crushing plants. View shows part of a Cedarapids portable crushing and screening plant, utilizing a Symons Cone Crusher. Unit is serving a large Texas aggregate producer.

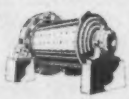
C-100

ILLINOIS TOLLWAY

(ABOVE:) Tri-level interchange of Northwest and Tri-State Tollways near Chicago's O'Hare International Airport.

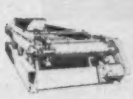
(RIGHT:) View of the modern Northwest Tollway bridge crossing the Fox River near Elgin, Illinois.

SYMONS PRIMARY GYRATORY CRUSHERS

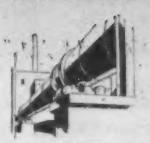


NORDBERG GRINDING MILLS

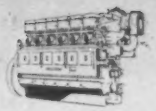
SYMONS VIBRATING GRIZZLIES



SYMONS VIBRATING SCREENS



ROTARY KILNS AND DRYERS



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SYMONS SCREENS NORDBERG

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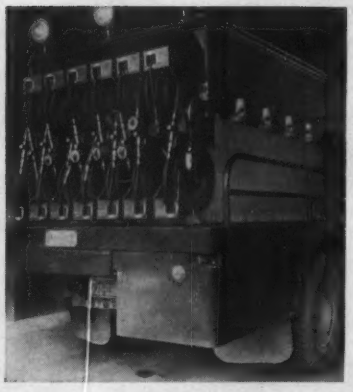
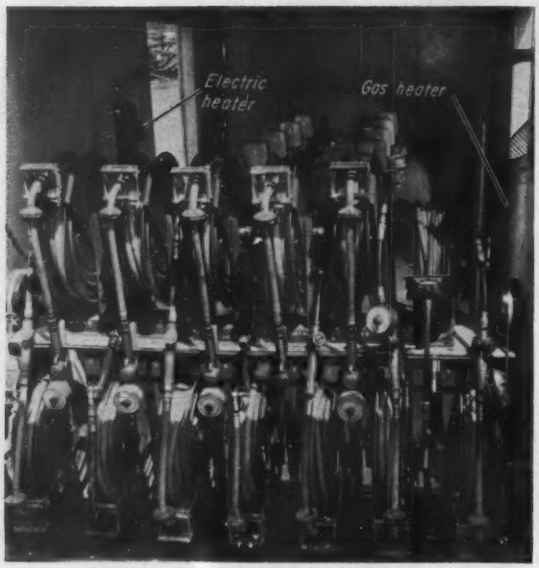
Some of the best-equipped lube trucks in the business are owned by a smart Philadelphia contractor. The rigs carry 12 lubricant services to meet any lubrication requirement. And there's a special rig to service the lube rigs.

Well-Equipped Lube Trucks Meet All Service Conditions



SUPER LUBE RIG—Hopper type lube truck mounts Aro lubrication equipment.



ENCLOSED VAN—This lube van carries Graco equipment and two heaters. Heater at right works on gas; heater in left rear is electric and operates on house current.

NOTHING BUT THE BEST is good enough to lubricate the equipment of James D. Morrissey, Inc. of Philadelphia. And his mobile lube rigs are huge machines, better equipped than many a stationary shop.

Morrissey operates truck-mounted units of various vintages—some of the lube equipment dates back more than 20 years and has outlived a number of trucks. The newest is not completed yet. But two of the new rigs are in operation, and they would be a joy to any maintenance man.

Both of the new rigs as well as the uncompleted one are of the hopper type. A large, one-piece welded tank takes up the major part of the truck bed. The tank is divided into 12 compartments of different sizes to match the volume of lubricant being used.

The lubricants include three grades of motor oil, two grades of gear lubricant, air cleaner oil, compressor oil, hydraulic oil, chassis lube, track lube, and a general purpose oil. There are two services for SAE-30 motor oil. In addition to this, the rigs are equipped with an air service and two electric cord reels. The hose reels are arranged in two tiers and take up the entire rear end of the truck.

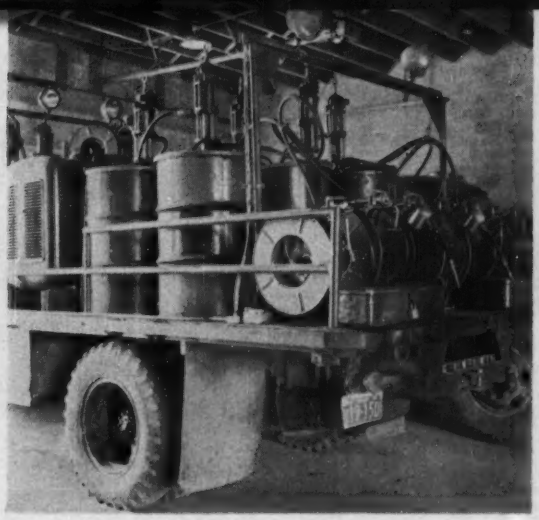
One of the two luxury rigs is equipped with Graco pumps and a van body, complete with skylight; the other features Aro pumps, but has no van.

But nothing is ever perfect. The van type unit is rather crammed inside and there is not enough room to walk around the tank. One either has to climb over it or get out and walk around the end of the truck. This rig carries no water, so a tank truck must supply this service. One of Morrissey's maintenance men also feels that the reels should have been mounted higher off the truck bed to permit cleaning under them. That's because Morrissey wants his rigs kept spotless.

But this rig has the advantage of an insulated van body that can be heated. It is equipped with two heating systems. One is electric and operates on house current; the other operates on bottled gas. Warming the lubricants in cold weather improves pumping efficiency and makes lubrication easier.

Either heating system operates only while the rig is not in use. When in use, the unit's compressor develops enough heat to warm the equipment and the lubricants.

There's plenty of room on the open-body rig be-



OLD RIG—One of the older rigs still in use is equipped with drums and Lincoln components. It carries only seven services.

BIG TANK—The 12-compartment tank covers most of the truck bed. Steel tubing for supply lines is enclosed on top of tank.

cause the truck is longer and there is a space between the front of the 12-compartment tank and the front-mounted compressor. Also, this unit carries its own water supply in a separate tank directly behind the cab. The water is dispensed by gravity.

TRANSFER TRAILER

Having super-deluxe mobile lube rigs is only part of the Morrissey maintenance story. They even have a rig to service the lube rigs. This is a van type trailer equipped with transfer pumps to handle the various lubricants. The trailer is, in effect, a lubricant supply station on wheels.

Inside the trailer are two rows of lubricant drums. Transfer pumps are mounted on one row of drums while the other row contains full spares. The trailer replenishes the lubricant supply of the lube rigs in the field.

There are several advantages to this arrangement. When a number of jobs are involved—all some distance away from home base—it's easier and cheaper to have one truck supplying all of the lubricants than to have each of the lube rigs going back and forth to the warehouse.

Of course, oil companies can deliver their products directly to the job site. But refilling a lube rig would involve a lot of drum handling, possible lubricant contamination, and time lost in the field. Also, this system would require several transfer pumps on each lube rig and, possibly, extra personnel. With the transfer trailer, oil companies can deliver their lubricants directly to the trailer with a minimum of handling and no chance of contamination.

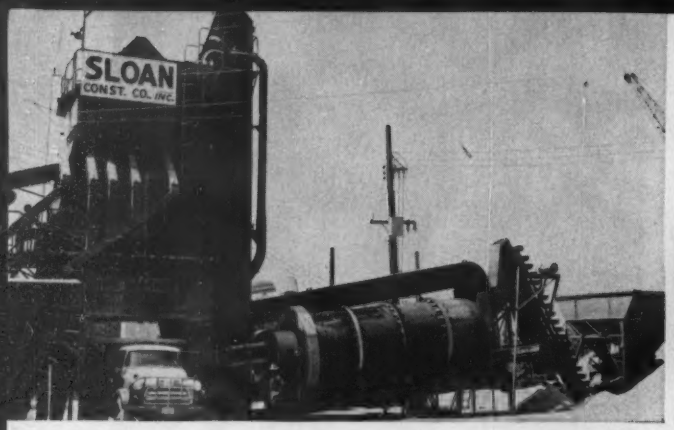
HOME BASE

Morrissey's warehouse installation is another model for the lubrication man. One part of the warehouse contains a large supply of lubricants in drums. Along a wall of the storage area is a row of high-capacity transfer pumps to dispense the lubricants from the drums to the various compartments on the lube truck, which parks on the other side of the wall.

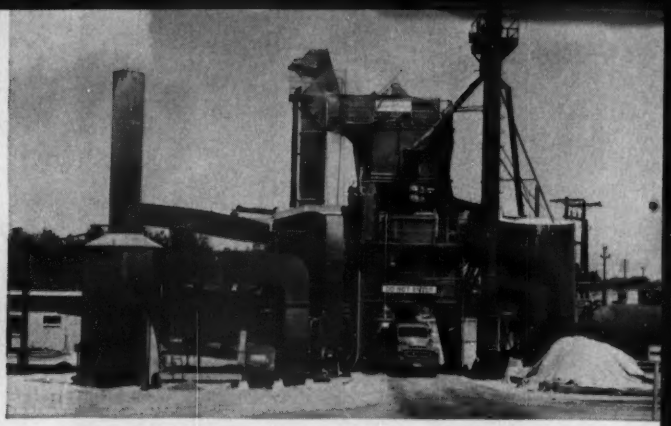
Hoses with controls are coiled on special racks above a loading platform along the wall, and several lubricants can be replenished simultaneously. The setup is designed for maximum speed with a minimum of effort, and this is true of Morrissey's entire maintenance program.

FILLING STATION—Hoses from transfer pumps behind the warehouse wall deliver lubricants directly into the hoppers on the trucks.

TRANSFER PUMPS—Inside the warehouse, full drums are lined along the wall, and Lincoln pumps dispense the lubricants to the rigs parked on the other side.

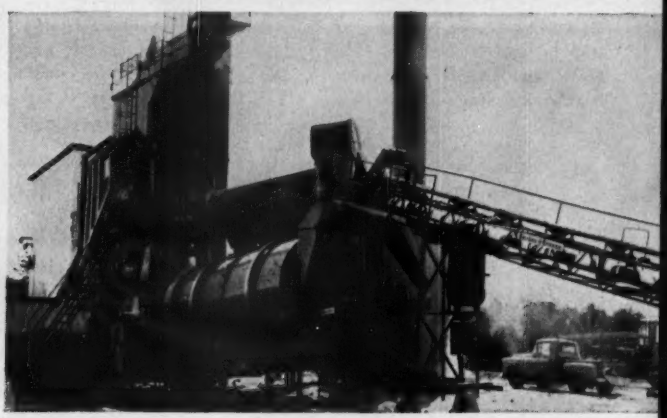


Oldest of the Sloan BatchOmatics is this 894, Liberty, S. C., which runs 100% automatic and has produced 515,000 tons since 1956.



On a permanent location at Lakeside Quarry, Greenville, S. C., this 896 BatchOmatic is nearing the 200,000 ton mark and has run 100% automatic since the fall of 1958.

Here's an 848 plant that has been moved 30 times since 1952 and has produced 1,600,000 tons over that span. Located at Blacksburg, S. C., the plant averages 150 tph with a top of 225 tph.



Third and newest of the Sloan BatchOmatics is this Model 896 shown just starting operations at Pacolet, S. C.

FIVE BARBER-GREENE PLANTS OF LOW-COST MIX FOR

Large asphalt contractor in southeast buys 6th plant to work with nine Barber-Greene finishers on '60 contracts totalling 1,200,000 tons

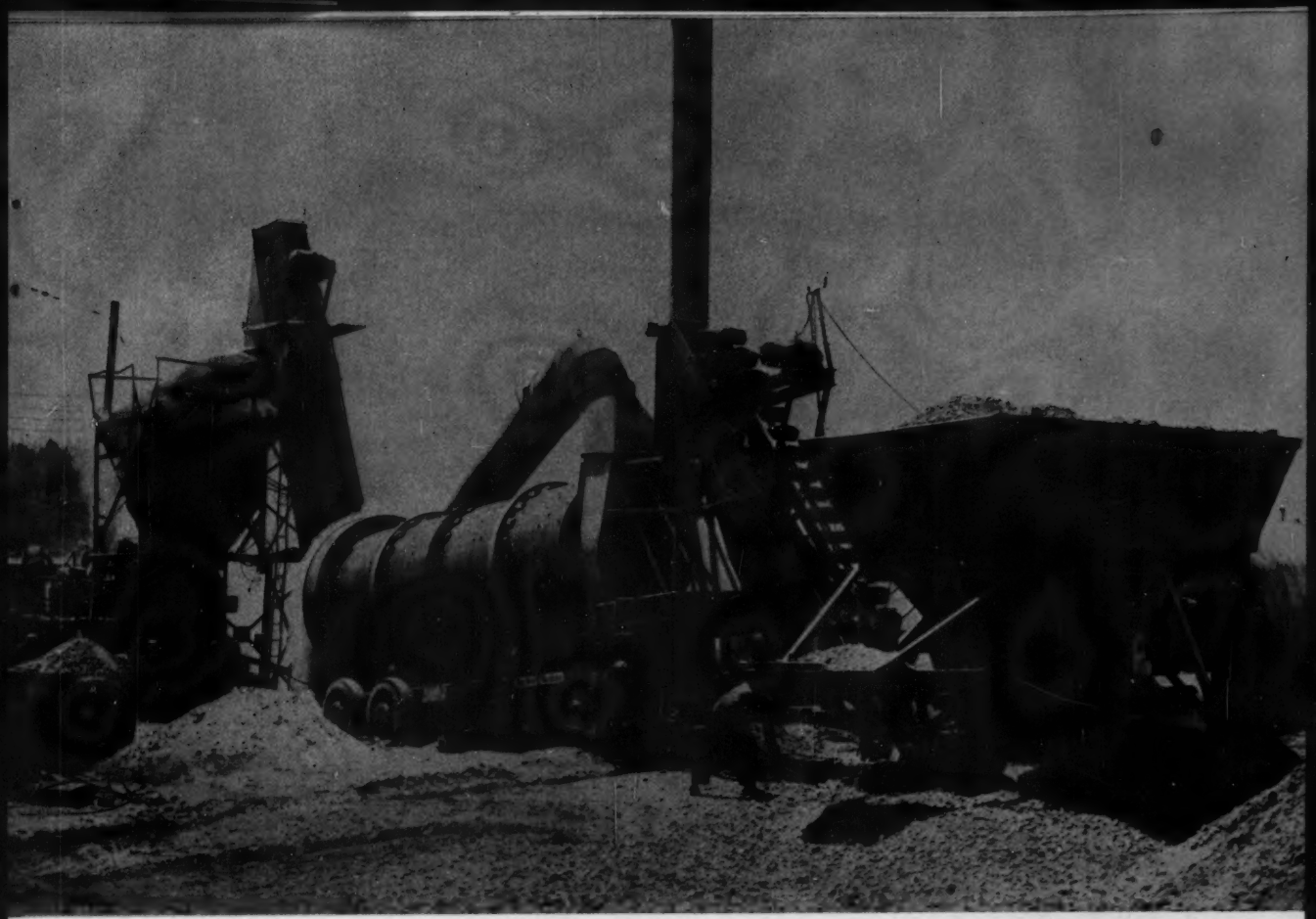
Sloan Construction Co., Inc., Greenville, South Carolina, large asphalt contractor in the southeast, has produced 5,090,800 tons of low-cost asphalt mix with five Barber-Greene Continuous Mix and BatchOmatic plants.

V. H. Breazeale, vice president and procurement manager, says "We have just added a sixth Barber-Greene—a Model 896 BatchOmatic, to use with our nine Barber-Greene finishers in handling our 1960 contracts which total 1,200,000 tons, including $4,500,000 worth of Interstate jobs.

All Plants Are Barber-Greenes—"We've standardized on Barber-Greene plants," he adds, "because of years of satisfactory service from the equipment and the men who back up what they sell. We buy Continuous Mix plants because we've found they consistently maintain accuracy well within spec tolerances and because of the ease with which they can be transported from job to job and set up in 3-5 days. Because of this good record, we have now decided upon Barber-Greene BatchOmatic plants for our permanent installations. Maintenance on all our plants has been low and our men are so familiar with them that servicing is done in minimum time."

Sloan's present plants, purchase dates and total output follow: Model 848 Continuous Mix, 1946, 2,200,000 tons; Model 848 Continuous Mix, 1952, 1,600,000 tons; Model 848 Continuous Mix, 1955, 600,000 tons; Model 894 BatchOmatic, 1956, 515,000 tons; Model 896 BatchOmatic, 1958, 175,800 tons; and Model 896 BatchOmatic, 1960, ready to start operations.

Before buying your new asphalt plant, check



Starting its 15th year of service is this Model 848 Continuous Mix plant, the oldest of the Sloan-owned Barber-Greenes shown at Fair Forest, S. C. The firm has produced 2,200,000 tons of mix with this durable veteran that shows no signs of approaching retirement age as it heads for the 3,000,000 ton class.

PRODUCE 5,090,800 TONS SLOAN CONSTRUCTION CO., INC.

with your Barber-Greene Distributor and discover why his plants were again an overwhelming No. 1 choice of contractors in a 1960 poll. He offers you greatest choice of components, greatest values, even complete materials handling systems including conveyors, elevators and feeders.

Only Barber-Greene offers four different finishers plus a new versatile Road Widener—equipment sized for all your needs.

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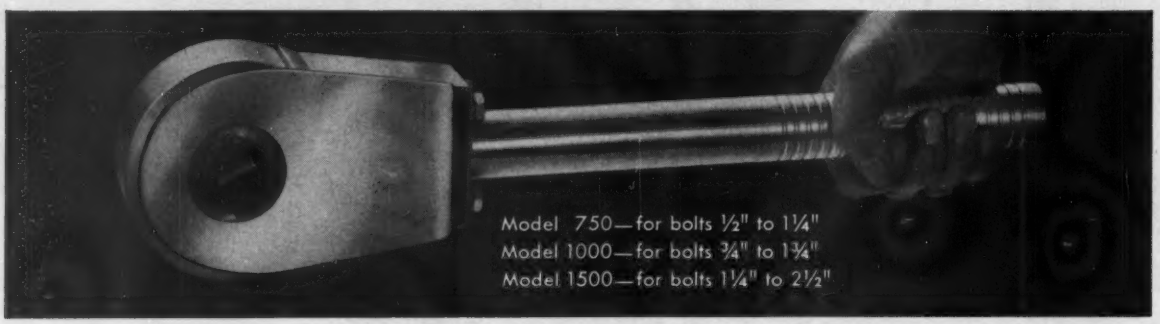
designed to solve a universal maintenance problem . . .

first manual impact wrench that works . . .
LOOSENS THE TOUGH NUTS
EVEN POWER WRENCHES CAN'T BUDGE!

SWENCH®



• Loosens "frozen" nuts in seconds • Tightens nuts to maximum practical tightness

There's never been anything like Swench before. It is an entirely new concept in wrench design. Swench is the world's *only manual impact wrench.* Here's what Swench means to you . . .

NEW SPEED—Nuts that previously had to be burned off can now be "Swenched off"—with unbelievable ease—by *one* man—in a matter of minutes.

NEW EASE—Only Swench in its torque class is truly portable . . . lets you take the wrench to the job—*anywhere*—with no auxiliary equipment, no power connections.

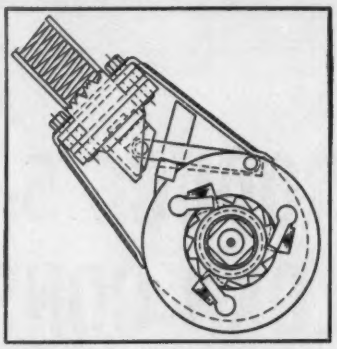
NEW SAFETY—With Swench there's no back-breaking, knuckle-knocking struggle . . . no dangerous handle extensions . . . no sudden release of a frozen nut . . . no shock transmitted through the handle.

NEW POWER—Swench, size for size, gives greater—and more effective—torque than power wrenches . . . multiplies torque applied to handle over 1500% (yet all Swench's power is built into the wrench itself).

NEW ECONOMY—Swench saves in *many* ways . . . no auxiliary equipment to maintain and man, no costly upkeep on the wrench, no man-hours fighting frozen nuts—*and* Swench costs less than half as much as wrenches with comparable impact power.

NEW VERSATILITY—*One* Swench can handle more bolt sizes than any power wrench . . . loosening or tightening requires no special adjustments.

NEW TENSIONING ACCURACY—Precise tightening is assured with Swench, following simple instructions.



INSIDE STORY—How is all this possible? Unlike power wrenches that deliver many tap-like blows, or ordinary manual wrenches that apply steady torque, Swench builds up power in its super-strong spring for a mighty wallop that is released as torsional impact every time the handle is advanced slightly more than 30 degrees.

Write for further information.

See for yourself! Swench is so different from anything you've experienced, you'll have to see it in action to believe it. For a quick and convincing demonstration, contact Marquette.

"When you're up against the tough nuts . . .
Don't wrench it . . . SWENCH it!"

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Maintenance Men at Niagara Keep the Big Fleets Rolling

By JAMES G. RIPLEY, Associate Editor

THE SIX MAJOR CONTRACTORS on the $720-million Niagara Power Project are both teachers and pupils in the world's biggest and toughest maintenance school.

Those who graduate from the course will know just about everything there is to know about keeping construction equipment on the move. If any don't pass, it will be because they didn't learn their maintenance lessons well enough or fast enough.

But there's no reason for anyone to fail the course. Some of the best equipment men in the world have set up shop here. They have kept fleets of equipment worth millions of dollars working at a breakneck speed 24 hr a day for the past two years. And they'll go on doing it until the project is finished next year.

By the end of the job, the machines will have dug 39,000,000 cu yd of material, most of it rock, and will have placed 3,500,000 cu yd of concrete.

Many equipment manufacturers are taking advantage of free tuition at Niagara. Of course, they're giving out a lot of advice, as well. Six independent contractors, working in similar environments, provide a unique opportunity to compare methods and experiment with new ideas. Many of the lessons learned on this project will influence equipment design and maintenance for years to come.

Contractors who will never see the shops at Niagara can take a correspondence course in the subjects being taught there. CM&E visited each of the contractors on the job and has recorded how they take care of their equipment and what aspects of maintenance they consider most important.

We picked one general principle of good maintenance that seems to illustrate each contractor's program. This doesn't mean that all the contractors don't practice all the principles. But each one places the emphasis in a slightly different way.

ECONOMY — Merritt-Chapman & Scott designed their maintenance setup at the intake end of the job to fit compactly into one building. They made some of their own shop equipment and kept purchased equipment to a minimum. MC&S has a $66-million contract for the intake structure and 8,000 ft of twin conduits.

CLEANLINESS — The joint venture of Balf-Savin-Winkelman keeps its rigs so clean that the men take a real pride in working on them. B-S-W has a $37-million contract for 9,000 ft of twin conduits.

PREVENTIVE MAINTENANCE — The joint venture of Gull-DeFelice has tried several techniques for preventing wear on equipment. Gull-DeFelice has a $30-million contract for 5,500 ft of twin conduits.

DEPENDABILITY — Channel Constructors (a joint venture of Kiewit, Perini, Morrison-Knudsen, and Walsh) has the job of supplying all the other contractors with aggregate. So it's vital for them to keep their plant (the world's biggest) operating continuously with no breakdowns. Channel's $32-million contract also includes construction of 4,000 ft of open canal and an 1,880-acre reservoir.

GOOD RECORDS — Tuscarora Contractors (joint venture of Arundel, Dixon, and Hunkin-Conkey) makes sure that data, comments, and work to be done on equipment are recorded on paper rather than depending on uncertain word-of-mouth communication. Tuscarora has a $40-million contract for the pump-generating plant.

FLEXIBILITY — Merritt-Chapman & Scott really has two jobs at the powerhouse—the structure itself, and a rugged 9,600,000 cu yd rock excavation operation. So their maintenance setup is adaptable to two types of equipment fleets. MC&S has a $98-million contract for the generating plant and forebay.

Merritt-Chapman & Scott operates an economical shop. Story on page 116

MILE-HIGH CALIFORNIA ROAD JOB

NEW TRACTOR-REALLY

Packs it in—two D8H Tractors, pulling and pushing, fill a 491 Scraper with hard-to-load breccia, a cemented gravel, in 45 seconds.

SCRAPER TEAMS PRODUCE

"A GOOD COMBINATION FOR THE ROUGHEST WORK"

TAKE boulders, volcanic ash and mud—mix well with decomposed shale—then add mile-high working altitudes, side-hill operation and unfavorable weather . . . these are some of the problems facing A. Tiechert and Son Inc. as they push a new highway through the Sierra Nevada Mountains in Eastern California. The job, 7.8 miles of freeway construction on State Highway 40, involves moving two million yards of earth in two five-month seasons. In spite of the obstacles, the Sacramento contractor holds the work to schedule, expects to complete the job on time this October.

Four D8 Series H Tractor-491 Scraper teams, push-loaded by D8s of the same series, set the pace for this difficult job. Because of the steep hill haul roads, they start the cuts and fills, then handle earthmoving on hauls up to 700 feet. DW21 wheel units take over on the longer hauls that range up to 7000 feet.

"The 491 Scrapers with D8s front and rear performed very well—especially in wet, rocky ground," says W. W. Staring, Project Manager. And he adds, "Operators and foremen especially like the 491 in rock because of higher apron clearance, excellent ground clearance and the good distance from axle to apron. In most cases we used D8-491 teams instead of shovels on shot breccia. It's a good combination for the roughest work."

On rugged big volume, short haul operations like this, Caterpillar track-type Tractor-Scraper combinations are the most efficient way to move earth. The new D8 Series H, for example, is over two tons heftier than the previous model, packs 23% more horsepower (235 flywheel HP), and with direct drive has a speed of 6.3 MPH forward. Team it with the 491 Scraper (34 cu. yd. heaped, 27 cu. yd. struck) or the 463 Scraper (28 cu. yd. heaped, 22 cu. yd. struck) for big capacity loads.

The finished product—traffic moves with speed and safety over a newly completed section of California State Highway 40.

Get all the facts—plus a profit-proving demonstration—on the new Caterpillar D8H Tractor and the 491 Scraper from your Caterpillar Dealer. He's ready right now!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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BORN OF RESEARCH
PROVED IN THE FIELD

***ECONOMY**—By putting all the indoor operations under one roof and taking full advantage of ingenious job-built equipment, Merritt-Chapman & Scott Corp. has come up with a compact, efficient, and economical maintenance shop arrangement.*

PRESS—Tom Trevena demonstrates 10-ton press he made from channels and jack to remove the bushings from starters and pumps.

JIB CRANE—Mounted on one column, this job-made jib crane carries a 1-ton hoist. Crane lifts radiators in and out of test tank.

One Large Building Houses All Shop

"SETTING UP all your shop operations under one roof is economical and it makes it easier to keep track of what is going on." Carl Trevena, equipment superintendent for Merritt-Chapman & Scott Corp. on the intake contract, doesn't like to spend money on extra buildings and equipment if he can figure a more economical way to do the job.

"For instance," he says, "an overhead crane would be a nice rig to have in the shop. But for the number of times we would use it, it wouldn't pay." He feels the same way about separate buildings for grease and tire shops.

The result is a single, efficiently laid out shop that houses all maintenance activities that have to be done indoors. The shop contains several pieces of equipment designed and built right on the job.

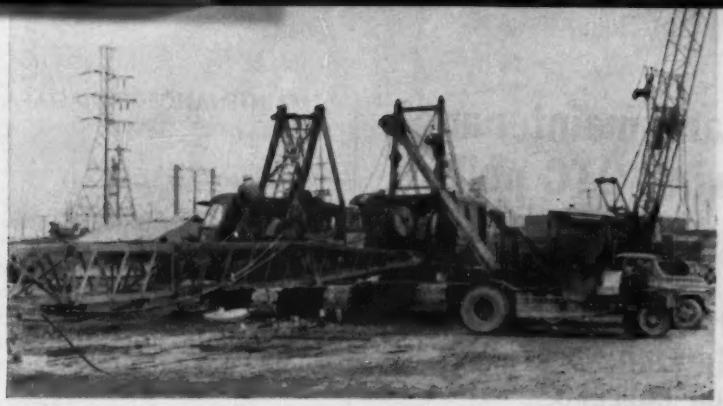
MC&S personnel on the intake project can afford to keep their maintenance facilities to a minimum because MC&S has set up at the powerhouse the most complete machine shop on the whole Niagara project. This could help the intake in an emergency. Actually the intake doesn't call on them very much because the powerhouse crews have their hands full looking after their own job. But having the other setup to fall back on still doesn't change Carl Trevena's basic philosophy. He likes to run an economical shop.

Main Shop

MC&S's shop is an Armco steel building 240 ft long and 100 ft wide. The workshop occupies 60 ft of the width. The remainder of the building contains a parts storage section, general material warehouse, workbench for air-tool repairmen, and a bench for battery charging.

The shop is located at the extreme north end of the job because there was no space for it in a more central location. This is inconvenient, because most of the construction work is at the south or intake end. For a time, before construction roads were completely grade-separated from the city streets that cross over the project, MC&S found it difficult to get equipment from one end to the other. Sometimes they had to mount a rig on a lowboy trailer and haul it over city streets to get it to the shop. This partly accounts for a practice they developed of doing a considerable amount of repair work, even major jobs, right in the field.

The main shop has ten bays with a 16x16-ft door in each. An additional 19x19-ft door at the end was provided so that cranes could get in, but this door is seldom used. Two of the bays at one end are occupied by welders. A third bay, adjacent to the welding bays, is fenced off and contains the tire shop.



FIELD REPAIRS—Mechanics with hydraulic crane handle major body repair work on a pair of damaged cranes right in the field.

WASH STATION—Man with high pressure hose and 4-in. Peerless pump uses river water to jet mud off Euclid transmissions in a hurry.

ment superintendent, who works on electrical maintenance, has developed and built a couple of his own pieces of shop equipment. One is a 10-ton press, the only press in the shop. Tom built a frame of 4-in. channels, with the bottom horizontal member pin-connected to the sides so its height can be adjusted. He mounted a Blackhawk Porta-Power jack on the top beam with a gage on the supply line to measure hydraulic pressure. He uses the rig mainly for pressing bushings out of starters and pumps.

He also built his own generator testing machine. It consists of a panel containing an ammeter and five voltage regulators to cover every type of generator. A ½-hp motor, powered by two 12-v batteries in series, drives the generator to be tested.

Modified Euclids

MC&S has 62 Euclid trucks on the job now; at one time they had 87. Fifteen of them have been rebuilt to carry two 4-yd concrete buckets each. The regular body and hoist were removed and

Operations

The shop contains no overhead lifting devices except for a portable A-frame made on the job, and a job-made jib crane on one wall. The A-frame is 12 ft high and carries a 1-ton aluminum Peerless chain hoist.

The jib crane is a 6-in. I-beam, 12 ft long, mounted on a bracket on one column. A Yale trolley carrying a Peerless 1-ton chain hoist runs along the flanges of the I-beam. The crane is mounted over a water tank for testing radiators and is used mostly for radiator lifting.

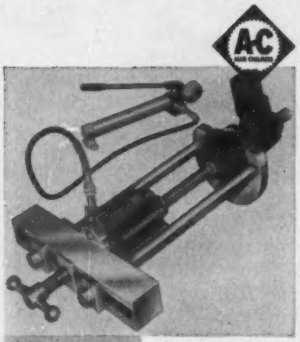
In the yard are two Krane Kars, one of 5-ton capacity and one of 10-ton capacity. These rigs handle lifting on rigs at the front of each bay. They rarely go inside the shop to handle rigs in the back of a bay.

The only major machine in the shop is a Botwinik upright drill. It's an ancient model but is still highly effective.

Tom Trevena, son of the equip-

OVERHEAD LIFTS—Job-built A-frame with 1-ton hoist provides the only overhead lifting capacity required in the shop.

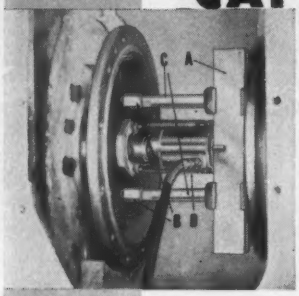
Cut "downtime"— and maintenance costs with time-saving OTC pullers



EXAMPLES:

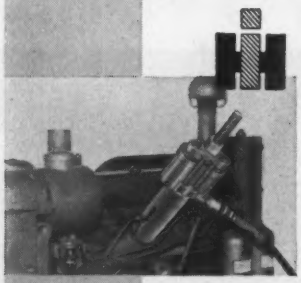
REMOVING AND INSTALLING HD-21 TRACK ROLLERS

The safe and easy OTC way to remove and install track rollers on HD-21 track roller assemblies. Use only two special tools—an OTC puller yoke and step plate adapter—with standard 50-ton Power-Twin hydraulic push-puller assembly.



PULLING D-9 FINAL DRIVE PINION FLANGE

Four OTC tools combine to hydraulically handle this otherwise difficult, time-consuming job: (A) push-puller, (B) push-puller legs, (C) male-female adapters, (D) 17½-ton ram and hydraulic pump assembly. One of many Caterpillar pulling jobs handled safely and easily with special OTC tools.



PULLING PRE-COMBUSTION CUPS; D-236 AND D-282 MODELS

A labor-saving tool for pulling pre-combustion cups on all International diesel engines, including models D-236 and D-282. Expandable adapters assure positive inside grip, will not slip regardless of cup condition. Pre-cup puller sets are available for either hydraulic or manual operation.

SERVICING MAINSHAFT OVERDRIVE GEAR IN MODEL B TOURNAPULL

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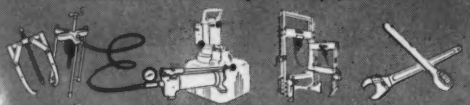

PULLERS AND PULLER SETS · HYDRAULIC RAMS AND PUMPS · HYDRAULIC SHOP PRESSES · HAND TOOLS

ECONOMY

replaced with a job-fabricated flat-bed body.

On eight of the earthmoving Eucs, MC&S welded a steel baffle across the back of the body to hold in the soupy mud that is being excavated from the river bank. The baffle consists of a ¾-in. plate with braces. With the baffle, a Euc can carry 12 yd of mud; without it, most of the load would flow out the back.

General Maintenance

Like the other contractors, MC&S has considerable trouble with tires. At first they didn't pick up many nails from the road. They started to pick up more when forms were stripped. Now they periodically borrow a home-made, electro-magnet from the powerhouse to clean steel from the roads. But the magnet can't work under water and some of the machines near the river have to work in water. One Payloader that was in water a lot of the time picked up 33 nails in one tire. B. F. Goodrich handles tire repairs on the job.

A steam cleaner outside one corner of the main shop cleans parts that go into the shop. But for the important job of cleaning mud off Euc transmissions, Carl Trevena figures a high pressure water hose is about four times as fast. He has set up a 4-in. Peerless pump on the river bank where there is an unlimited supply of free water. (MC&S is the only contractor that is close enough to the river to do this; the others have to buy city water.) The pump delivers 80-psi water and a 2-in. nozzle increases the force of the jet even more. Of course, in the winter, the crews have to revert to steam cleaning the transmissions.

Equipment on the job includes 33 cranes, 47 excavation Eucs, 15 concrete Eucs, 13 Cat tractors, 4 International tractors, 34 compressors, 16 drills, 16 pickup trucks, and 12 service trucks.

E. A. Pasha is project manager, Carl Trevena is equipment superintendent, Robert Goodfellow is master mechanic, and Earl Severance is shop foreman.

Ball-Savin-Winkelman makes a special point of keeping their rigs clean
Story starts on page 120

Blood Brothers Drive Assemblies help give power "pay-off" in

TOUGH HOUGH PAYLOADER®

Many outstanding improvements have made this Hough Model H-90B Tractor Loader a proven leader in its field. Available with 1½, 3 and 5 cubic yard capacities, it offers a full 50° bucket-dumping angle, plus maximum lifting height and reach for loading large hauling units.

The lower-front drive shaft and lower-rear drive shaft used on this latest equipment were manufactured to exacting specifications by Blood Brothers. It is typical of the many quality drive assemblies Blood Brothers furnish for special equipment of all sizes.

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Clean Rigs Help a Lot to Make

CLEANLINESS—*Men take an interest in maintenance when they have clean rigs to work with. Balf-Savin-Winkelman stimulates this sort of interest by keeping rigs painted inside and out*

KEEP IT CLEAN — Oiler on Lima crane spends his spare time touching up painted surfaces. Continual efforts keep machines looking new.

"WHEN YOU KEEP your equipment clean, a contractor is proud to own it and an operator is proud to use it". That's the way Gus Malchoff, equipment superintendent for Balf-Savin-Winkelman, feels about the equipment he is responsible for.

"When you see good-looking machines on a project," he says, "you get the impression that the men are doing a good job. We keep our shovels and cranes painted inside and out. Paint is the cheapest thing we can buy to keep our rigs loooking good".

B-S-W's equipment certainly is impressive looking. The big machines that have been working in dusty excavations 24 hr a day for the past two years look as if they had just come off a showroom floor.

And the central compressor plant, designed by project manager Dave Stinson, is as spotlessly clean as a model plant at a trade fair, even though it also operates 24 hr a day. Stinson buried the piping under the concrete floor (eliminating maintenance on it) and installed four Joy compressors in pairs with a common motor for each pair. The whole setup is neat and efficient looking.

There's more to the cleanliness policy than just the satisfaction of having the rigs look good. "When the men have clean equipment to work with," Gus says, "they take a real interest in keeping the machines in good working order as well".

You can sense the interest and pride that the maintenance men take in looking after the machines when you talk to the mechanics in B-S-W's shop.

The shop always is on the lookout for ideas that will help mechanics do a better job on the machines. Dick Herzog, shop foreman, who works under the direction of Gus Malchoff, has been very helpful in fostering new ideas. Here are some of the schemes the shop has developed.

MAIN SHOP — Major repairs are handled in 60x110-ft main shop. Extensions on ends house electricians, tires, and parts.

Removing Wheels

The shop has come up with a neat frame for removing Euclid wheels. It's a C-shaped affair about 4 ft high. The vertical member is a 3-in. steel pipe. The top part of the "C" is made of ½-in. plate with a hole cut in it for a crane hook. The bottom part of the "C" is a 3-in. pipe welded to the vertical pipe and braced with a gusset plate. On the end of the horizontal pipe is a ½-in. thick circular steel plate with bolt holes to fit the bolt holes on the Euc

Maintenance Easier

FIELD SERVICE — Located next to concrete plant, this 16x30-ft service shed handles lubrication and minor repairs on Dumpcretes.

WHEEL REMOVER — Job-built C-frame bolts onto the wheel of a Euclid, makes it easy for the overhead hoist to remove the wheel and tire.

wheel. To use the rig, a man simply removes the bolts from the Euc wheel, bolts on the C-frame, and an overhead crane removes frame and wheel.

Raising Tractors

Crews use homemade horses to hold tractors off the floor for track repairs. Each horse consists of a 6-in. WF section, 41 in. long, set vertically on a steel plate. Two horses spanned by a ¾-in. plate, 6 in. wide and 36 in. long, support each end of the tractor. Having the legs and the cross piece separate makes it possible for one man to handle them. If they were welded together into a unit, it would be too heavy for one man.

To use the horses, a tractor drives up onto 14-in. wood blocks until the front end rocks forward onto the horses. Then a second set of horses is placed under the rear. The steering clutches are released and the tracks spin out the wood blocks leaving the tractor about 4 in. off the floor. The process is reversed to get the tractor off the horses.

Assembling a Steering Pump

One of the mechanics developed a simple scheme for putting the vanes into a steering pump on a Euc. Eleven vanes have to go into a rotor mounted on a shaft. But there are two springs in each slot on the rotor and the vanes won't stay in until a ring is placed around them.

The mechanic took an old ring and cut a piece out of it the width of a vane. He puts this ring around the rotor and inserts each vane through the slot as he turns the ring around. The old ring holds the vanes until all are in. Then he slides on a new ring.

Modified Backhoe

One of the original pieces of equipment on the job was an International farm tractor with a Pippin backhoe that was to be used for scraping mud out of Euc bodies. But it is proving more useful as a light crane for maintenance operations. Gus Malchoff fabricated a special frame that replaces the backhoe bucket.

The frame, formed of three pieces of steel plate in the shape of a "U", bolts over the end of the backhoe boom. On the main plate is a hole to carry a hook. The straight part of the hook passes through the hole and washers are welded to it on each side of the plate to hold it in place yet allow it to swivel.

continued on next page

HANDLING ROLLERS — Pair of ice tongs makes handy lifting device for removing tractor rollers. Overhead crane lifts chain.

MUDGUARD JIG — Shop fabricates jig for building Euclid mudguards. Sample mudguard, (foreground) was made from several plates.

CLEANLINESS—

Shop-Built Gadgets

The shop builds its own spanner wrenches for the sprocket nuts on Cat tractors. They find commercial wrenches, made of ¾-in. plate, buckle too easily. They make their own to the same pattern, but make them 1½ in. thick. On some they add a small lug to get a gripping edge of one half the circumference of the nut (commercial wrenches usually grip less than half the circumference).

To handle tractor rollers, they fasten a chain to a pair of ice-tongs. An overhead hoist picks up the chain and carries the tongs and roller.

Machinery Modifications

Gus Malchoff is responsible for a number of modifications to equipment that help reduce maintenance costs. On the cabs of Cat tractors, for instance, he replaces the wood roofs with steel. Also, he cuts about 1 in. out of the steel pipe supports at the four corners and inserts inside the pipes heavy wire rope welded at top and bottom. The flexibility of the rope prevents the movement of the roof from cracking the pipes at the base under the vibration the Cat develops when working in the rock excavation.

He has made a number of modifications to the Eucs. The hinge pin between the body and frame has a lock bolt that tends to shear off. When this happens, the body rolls and can become badly twisted. To prevent it, a ¾-in. bolt is welded across the end of the pin. If the lock bolt shears, the end bolt holds the pin in.

A 10-in. channel section welded across the top front of the box keeps rocks from falling onto the cab.

Working in the narrow conduits, the Eucs continually come up with bashed mudguards. Some of the other contractors don't bother to fix them because it happens so often, but Gus likes to keep them straight because they guard oil filter and steering gear.

But he found that it was difficult to repair the curved mudguards on the original Eucs. So he is replacing them with homemade mudguards of straight sections of plate. If one section is damaged, it can be cut out and replaced easily. (Euclid now is going back to straight mudguards on their new models for this same reason).

The first mudguard Gus made on this job consists of a series of flat plates welded together at all joints. Now the shop is building a jig frame of 4x4x⅜-in. angles so that a mudguard can be shaped from larger pieces. The intention is to lay a large plate on the jig and heat it with a torch so it will bend easily over the jig frame. Gus figures they will be able to build a mudguard three times as fast on the jig.

FORGE — Blacksmith heats breaker points on this job-made forge. He then sharpens them on the anvil. Shop also contains a power hacksaw, drill sharpener, and induction heater.

PRESS — Joy press straightens drill rod brought in from field. Blacksmith shop reclaims old drill rods, also fabricates new sections from stock steel. Turret lathe puts on the thread.

Blacksmith Shop Is Equipped To Make and Repair Drill Rods

Blacksmith Shop

One thing that B-S-W has on the job that no other contractor has is a separate and completely equipped blacksmith shop. They do so much rock drilling that the shop is worthwhile.

Instead of having to order drill steel in specified lengths, they buy it in quantities of 40-ft lengths and fabricate it in the blacksmith shop. They also salvage and straighten old drill rods.

The shop includes nearly a dozen major machines. An Ingersoll-Rand drill sharpener puts collars and lugs on the drill rods. An oil-fired furnace heats the steel after it has been annealed in a lime box.

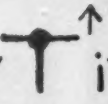
A Midland 11-in. turret lathe is used to put thread on the drill rods. B-S-W uses a rope thread for the rods because it is easy to connect in the field.

A Tocco electric induction heater and a Joy oil quencher temper the steel after it has been threaded.

For salvage work, a Joy press straightens 2-in. rods and a Blount bit sharpener handles dull bits. The blacksmith built a forge to heat breaker points so he can sharpen them by hand on an anvil.

The shop has a Johnson power hacksaw for cutting the lengths

continued on page 126

If it rolls on an axle or turns in a bearing or rides on a shaft
if it slides in a groove or moves on a pivot  if it bores or cuts or transmits pressure
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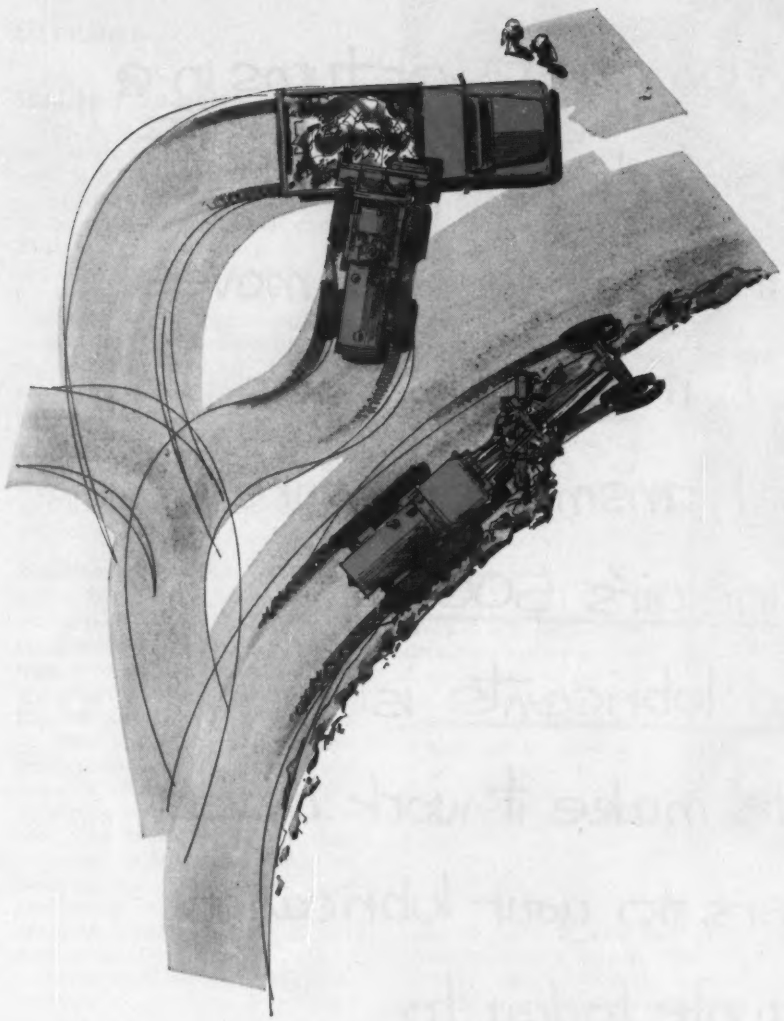

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Also, Cummins C&J Construction Diesels have specialized improvements for earthmoving applications. Your engine will be equipped with a composite dry-type air cleaner, special by-pass oil filter, "bottle-stopper" type dipstick and oil filler cap, and, on supercharged and turbocharged models, a special pressurized crankcase. Only Cummins offers all of these features to minimize the entry of dirt into the engine. Positive lubrication and fuel delivery are assured in high angular operations through the use of a multi-lube pump and special oil pan.

Further, C&J engines now come supplied with Cummins new improved PT fuel system. This system, plus Cummins open-combustion chamber design and four-cycle operating principle, enables you to save as much as 25%—30% in fuel costs over engines of other designs.

More than 500 Cummins Service points are located across the United States and Canada where you can always obtain parts and service. As an added benefit, Cummins Distributors also provide job-site help through regular calls of mobile service trucks.

For more information on the efficiency and low-operating cost of Cummins C&J Diesels, see your nearest construction equipment representative or Cummins Distributor.

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MAINTENANCE AT NIAGARA . . .

continued from page 122

CLEANLINESS—

of stock steel and a very useful Chisholm-Moore electrically powered ½-ton overhead crane that spans the width of the building and runs its full length.

The blacksmith shop also houses a work bench for the drill doctors. These men repair and lubricate the drills, vibrators, and other air tools that are used on the job.

Field Service Building

In addition to a main workshop, B-S-W has a smaller service shop for concrete-carrying vehicles. Located at the mixing plant, it is a 16x30-ft aluminum-sheeted timber frame building on a concrete slab. One mechanic per shift works here to handle minor repairs, oil, and lubrication for the Dumpcrete trucks. The building contains one Hobart welding machine. The fact that the building is located at the batch plant, where all the Dumpcretes have to pass, saves considerable time over making trips to the main shop.

Main Shop

The main workshop is 60 ft wide and 110 ft long. It has seven working bays with 16-ft doors. The first two bays are used for welding, the next three for Euclids, the next one for tractors and the last one for trucks.

At each end is a 40-ft lean-to extension made of wood framing covered with aluminum sheeting. The extension at one end houses the tire shop and electrician's shop. The other end is divided between the parts storage area and a living quarters for the purchasing agent who is on call 24 hr a day.

The only major machine in the shop is an Oster threading machine that can handle pipe up to 4 in. in dia and bolts up to 3 in. It can be used as a rough lathe in a pinch.

Four P&H 3-ton chain hoists on monorails supply overhead lifting capacity. The shop prefers them to a single overhead crane because four jobs can use them at the same time. The shop has ten floor jacks ranging in capacity from 10 to 100 tons.

Gus and Dick are pretty well satisfied with the shop. They both think it is big enough. But if they were setting it up again, they would put in a lathe and possibly a drill press. Gus would like to see the tire shop in a separate building and would also like a separate building for truck repairs only.

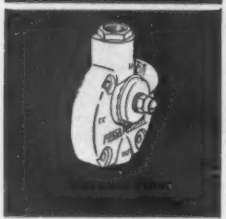
Lubrication

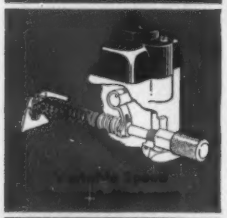
B-S-W is one of the few contractors on the project to have covered, specially-built lube trucks. They have two on the job, both built by Savin Bros. in Hartford, Conn. One came to the job complete with roof and sides, the other had roof and sides added on this job.

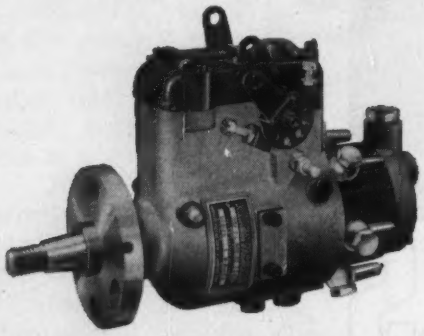
The enclosure keeps the oils warm in the winter. And it keeps out weather, water, and dust all the time.

Some of the oil tanks are built right into the truck. This reduces clearance under the truck so the driver has to be careful on steep

A few accessories that add versatility:







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- **VERSATILE** because only one size pump serves either a 2, 3, 4, 6, or 8 cylinder, 2 or 4 cycle, small or large displacement engine . . . and only Roosa Master can be mounted vertically or horizontally.
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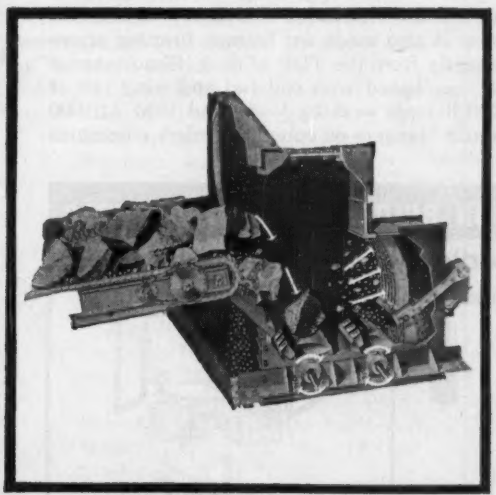

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Straightline flow makes bonus production possible. And only the Impact Master has it. Fast feeding and discharge is the result of two rotors turning in the same direction. Incoming rock gets the full impact of a square blow and is instantly shattered and thrown towards the upper screen grate. Finished material is immediately removed from the breaking chamber; unnecessary rebounding and congestion is eliminated. Oversize falls into path of second hammer circle and is quickly reduced to size and discharged.

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UNIVERSAL ENGINEERING CORPORATION

612 C Avenue N.W., Cedar Rapids, Iowa

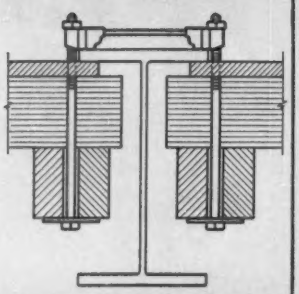
A subsidiary of Pettibone-Mulliken Corporation, 4700 W. Division St., Chicago 51, Illinois

SUPERIOR HANGERS...

Designed for Fast Erection and Easy Stripping

FOR STEEL BEAMS AND CONCRETE GIRDERS

ADJUSTS FROM TOP OF DECK



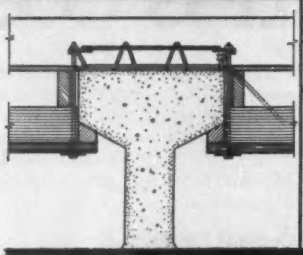
NEW Pres-Steel Hanger

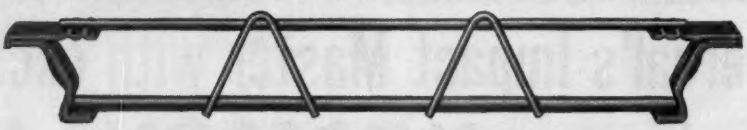
(Pat. pending)

This newly developed Pres-Steel Hanger combines the desirable features of conventional hangers, yet costs less! Assembly is simple, ½" Coil Bolts are passed up through the hanger—no threading is necessary—and a square coil nut is applied. All adjustment is made conveniently from the top of the deck. The foot of the hanger has a saw tooth edge which bites into the flange upon application of a load, preventing any movement of the hanger. The flat top provides even bearing for the nut and the bolt hole is so formed that there is no binding of the bolt on removal. Pres-Steel Hangers are also made to take the bolt or coil rod at 45°.

These economical hangers have a safe working load on steel beams of 8,000 lbs. (ultimate capacity 14,500 lbs.). On concrete girders the safe working load is 6,000 lbs. (ultimate capacity 9,000 lbs.).

ADJUSTS FROM TOP OF DECK



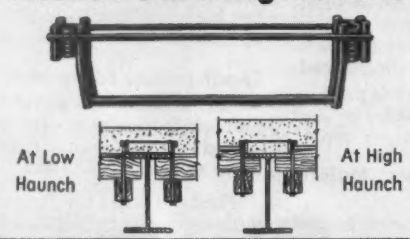


Prescon Hanger

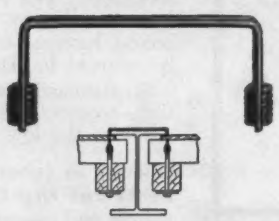
This unique hanger provides hanging points cantilevered away from the concrete girder sides. The forms are hung from coil bolts threaded into heavy square coil nuts bearing on the top plate. Provision is also made for haunch forming above the girder. Adjustment is made conveniently from the TOP of deck. Simultaneous overhanging slab or curb forming is accomplished with coil rod and wing nut at 45°. Available in two types—6M (6,000 lb. safe working load) and 10M (10,000 lb. safe working load). The use of Prescon Hangers on concrete girders eliminates hazardous, makeshift methods.

OTHER SUPERIOR HANGERS FOR HANGING FORMS ON BRIDGE SUPERSTRUCTURES

Haunch Coil Hanger Frame



Coil Beam Saddle



Wire Beam Saddle

SUPERIOR CONCRETE ACCESSORIES, INC.

9301 King Street, Franklin Park, Illinois ***(A Suburb of Chicago)***

New York Office 39-01 Main St. Flushing 54, N. Y. / *Houston Office* 4101 San Jacinto Houston 4, Texas / *Pacific Coast Plant* 2100 Williams St. San Leandro, Calif.

WORKING PARTS Returnable for credit.

For details request New CATALOG 700

CLEANLINESS—

ramps. Grease is carried in two 55-gal barrels with a Lincoln pump for each barrel.

Seven hoses at the rear supply transmission oil, hydraulic oil, air, No. 10 oil, No. 9 oil, and two outlets for grease. All lubrication products are supplied by Texaco. Each truck also carries small parts, oil filters, small tools, water, and a small Ingersoll-Rand compressor.

General Maintenance

Five specially-equipped trucks handle minor maintenance jobs in the field. Two pickup trucks carry general small equipment and parts. Two welding trucks are equipped with welding machines and cutting torches. The drill doctors have a ¾-ton Chevrolet pickup with a small Onan liquid cooled welding machine.

Tires are a big headache on this job, as on all the others. Goodyear maintains a two-man crew on each shift to handle flats. During May of this year, a typical month, the Euclids had 62 flats, the Dumpcrete fleet had 158, and the tractor shovels had 18.

Men and Equipment

Maintenance crew on the day shift consists of 10 shop mechanics, two field mechanics, four shop welders, two field welders, one mechanic-welder at the Dumpcrete service shed and another at the concrete plant, one drill doctor, one blacksmith, four lube men, one fuel man, two tire men, plus the superintendent, foreman, and steward.

Second-shift crew has a master mechanic, six mechanics, a drill doctor, a welder, and a fuel man. The third shift has a master mechanic, four mechanics, a welder, and a fuel man.

Major equipment on the job includes 11 cranes and shovels, eight Cat tractors, 18 Dumpcrete trucks, 22 rear-dump Eucs, 4 bottom-dump Eucs, eight front-end loaders, and two No. 12 Cat graders.

Dave Stinson is project manager and August A. Malchoff is equipment superintendent and master mechanic.

Gull-DeFelice stresses preventive maintenance on their machines. Story on page 131

BIG
in QUALITY and ECONOMY

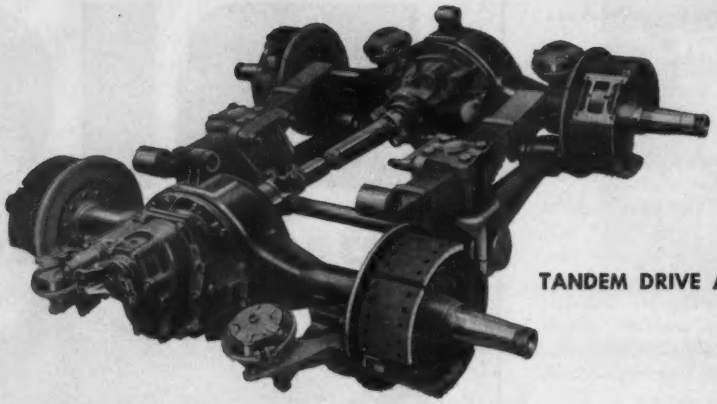
OWEN

OWEN clamshells are constructed with increased power and more durability foremost in mind. One of these features is the recessing of the top of each lip to receive the bowl plates. This gives the bucket a smooth interior and also relieves all stress and shear on the rivets that join the lips to the bowl plates. **Recessed lips are standard on all OWEN buckets —and at no additional cost!**

This is just one of the many reasons why OWEN Buckets are guaranteed pound for pound—size for size—to get a bigger load each bite—a larger output each day.

Write us your exact requirements. Remember, OWEN Engineers are at your service. Send for Free Catalog today.

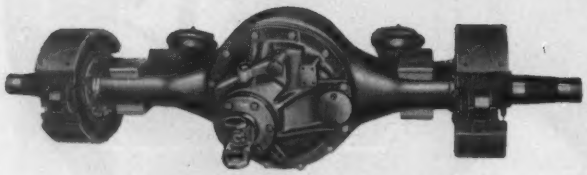
The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.



TANDEM DRIVE AXLES

"EATON AXLES"

The famous name that guarantees dependable performance and low hauling costs

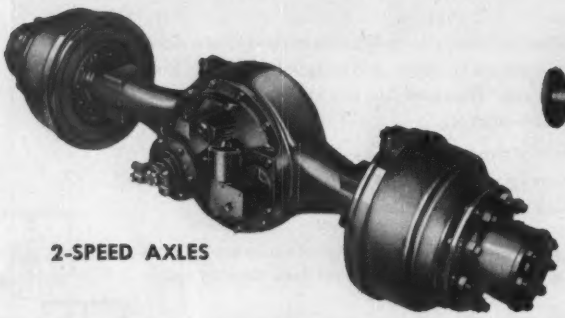


DOUBLE-REDUCTION AXLES

Through half a century, truck operators have learned that they can depend on Eaton Axles to deliver the kind of performance that keeps trucks on the road, cuts operating and maintenance costs, and adds to profit.

Eaton consistently leads the industry—particularly in the field of 2-Speed, Double-Reduction, and Tandem Drive units—with exclusive advancements which enable trucks to haul more legal payload, and add thousands of low-cost miles to both axle and vehicle life. The rugged stamina and efficiency of these Eaton-designed axles have been proven in billions of miles of operation in every type of service.

There's an Eaton Rear Axle best suited for your hauling requirement. Ask your truck dealer to help you specify the right one.



2-SPEED AXLES

SINGLE-REDUCTION AXLES

EATON *AXLE DIVISION*
MANUFACTURING COMPANY
CLEVELAND 10, OHIO

***PREVENTIVE MAINTENANCE**—Gull-DeFelice takes some special steps to reduce wear on equipment. They reinforce side frames of tractors before they go into the field and build up the wearing surface of idlers. They take special care of their batteries.*

Crews Stop Trouble Before it Starts

BODY REINFORCEMENT—Welder reinforces the inside of a Dumpcrete body with 2x4-ft plate of ¼-in. steel. Original body is made of ⅛-in. steel. Chute section on back of body has been replaced with heavier, job-built section. Plates prolong body life.

"WE SHUT DOWN a machine for 2 hr to make a minor repair that might take two days to fix if we let it go too long." That's the preventive maintenance policy of Mike Cazzolla, equipment superintendent for Gull-DeFelice.

It's a hard policy to follow, especially on this project where time is short and the pressure for continuous high production makes it difficult to pull a machine out of the line. But it's a good objective and it pays off in the long run.

Mike and his crews try to go even further and prevent the need for shutting down a machine at all. For instance, they check batteries often and take good care of them. "We have bought less than 20 new batteries in the past 2 yr," says Mike.

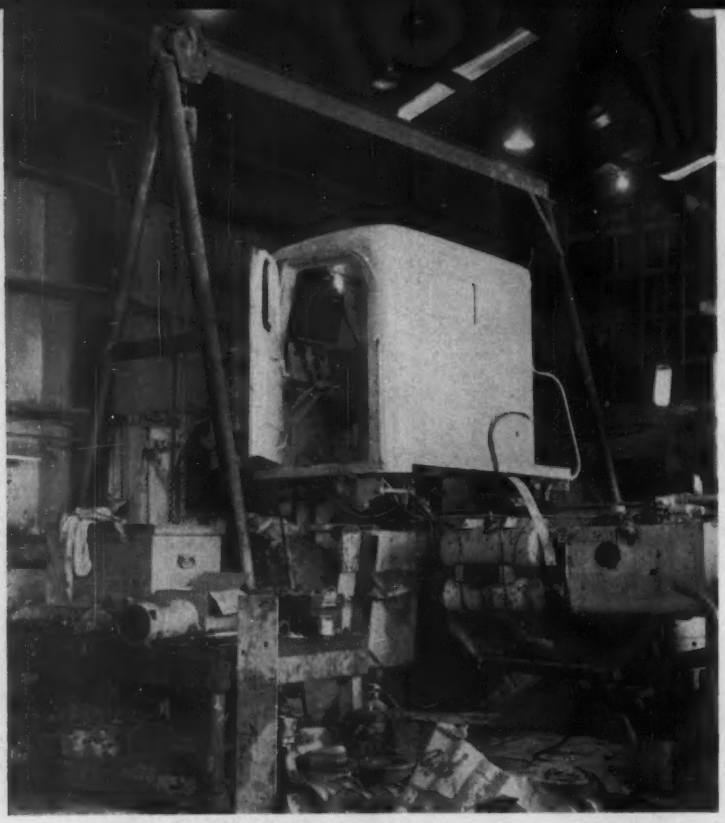
During the winter, four mechanics arrived on the job one hour before the operating shift each day. They went down the line of Euclids, carefully started the engines, and left them running until the drivers arrived. Mike figures the cost of the extra fuel this takes is cheap compared with the damage that could be caused to batteries or starters by drivers who get impatient if the engine doesn't start easily. There is a hitching post with outlets for block heaters that keep the engines warm overnight.

The biggest maintenance problem on any of the Niagara contracts is with the traveling rigs, mostly Eucs. It's not that the Eucs aren't tough: it's the continuous, brutal pace they have to maintain over rugged job conditions. Gull-DeFelice has the deepest excavations on the job and the steepest grades on haul ramps (as much as 20%). So they are especially concerned with looking after their Eucs.

They have cut the fourth or top speed out of the Eucs. Lowering the speed cuts production somewhat, but it more than pays off in reduced maintenance and tire costs.

They take the same care with shovels and cranes. "We haven't had a bearing burn out for lack of grease in two years," says Mike. "Average downtime per machine in two years of two-shift operation has been less than five days each."

Cables are checked every day and changed at the first sign of



OVERHEAD LIFT—Portable 16-ft high A-frame with 4-ton chain hoist lifts heavy parts from a Euclid. Disadvantage of A-frame is that it requires a clear alley to move in.

MAIN SHOP—Butler building 100 ft long, 60 ft wide, provides four working bays for heavy work. Separate two-bay truck repair shop takes some work load off main shop.

MAINTENANCE AT NIAGARA . . .

continued

PREVENTIVE MAINTENANCE—

wear. They are changed automatically every three weeks whether they look worn or not. "We don't take chances where lives are involved," says John Cazzola, Mike's brother, and the master mechanic on the job.

Gull - DeFelice reinforces certain parts of new machines before they start to work. For instance, they add a pattern of hardfacing material to the front idlers of tractors that gives them about two months of extra life from the idler.

They also find that side frames on tractors break too often under the vibration of working in the rock cuts. So they eliminate 90% of this trouble by welding a ⅝-in. plate to the side before the tractor goes into the field.

Dumpcrete body sides are made of ⅛-in. steel plate. Gull-DeFelice adds 2x4-ft plates of ¼-in. hard steel at the narrow part of the body that gets the most wear. They also replace the chutes at the rear with thicker hard steel plate.

On the front end of the Dumpcrete bodies they weld a hook so that if the hoist breaks down, a crane can empty the load of concrete by tilting the body, and the batch of concrete will not be lost.

Parts Supply

Gull-DeFelice likes to have a complete supply of commonly used parts on hand. Even though there are good sources of supply a few hours away, they figure they save a little time by having the parts right on the job. Their part storage area in the main shop occupies two floors, and the whole system is controlled by an up-to-date perpetual inventory system.

They don't worry about having parts left over at the end of the job. In most cases they can get back either the full purchase price or at least 90% of it. They figure rising prices for parts over the course of the 3-yr job will more than cover any loss they incur on excess parts.

Truck Shop

Gull-DeFelice is the only contractor on the project to have a completely independent shop for truck repairs only. The building is a 40x40-ft Butler building with two working bays. The floor is gravel except for the working areas in the bays; these areas are floored with 3x10-in. planks.

Two mechanics and a lube man work in the building on pumps and light repairs to trucks. Unusually heavy work is handled in the main shop. But generally trucks are kept free of the main shop so the mechanics there can concentrate on the heavy equipment.

Main Shop

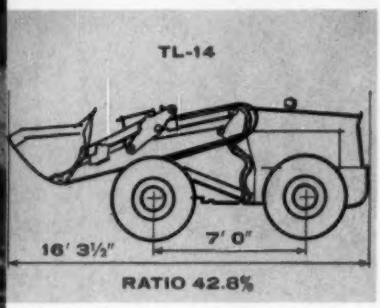
The main shop is a 60x100-ft Butler building with four working bays. Tire shop is located in an extension at one end; the parts storage area is at the other end.

continued on page 141

OFFER ALL OF THESE PROVE

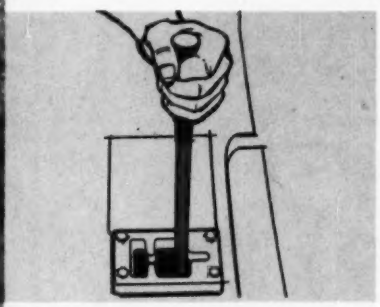
ED ADVANTAGES

unmatched stability



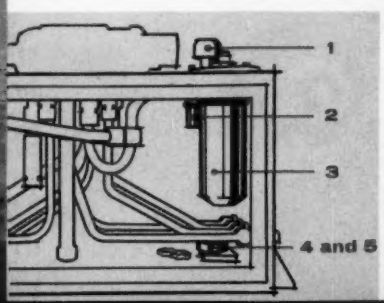
All three models offer higher wheelbase to length ratio for added overall stability. The kind of stability that lets you carry big loads at higher speeds over rough terrain . . . without tipping or spilling the load. Operators work with confidence on tricky loading operations, slope and stockpile work.

full control right in your fist



Exclusive single-lever control lets you go into and out of any speed, forward or reverse, with just a quick swish of your hand. Allis-Chalmers "one-stick" control makes fast work far easier by taking the time loss out of gear selection. Operators keep working at full capacity all day long.

5-way hydraulic filtering protection



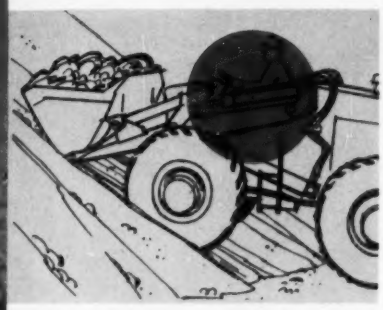
Only Allis-Chalmers tractor loaders provide 5-way protection for the hydraulic system. Air is double filtered by: *1. air breather* *2. air filter.* Hydraulic oil is cleaned by: *3. full-flow micronic filter* *4. conical screen,* and *5. magnetic filter.* Complete filtering protection means peak operating efficiency . . . extended life. Filters are easily accessible for cleaning and replacement.

ALLIS-CHALMERS
16

ALLIS-CHALMERS

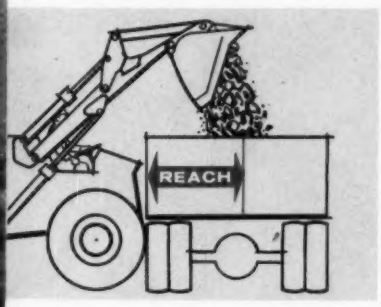
ONLY THE TL 14 TL 16 TL 20

safe dump cylinder location



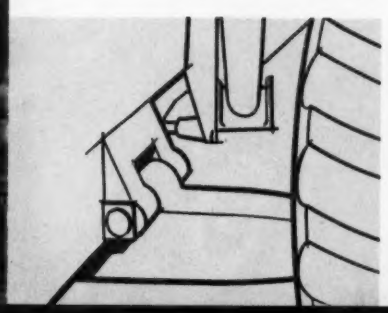
One "common sense" advantage that pays off is the safe dump cylinder location. The TL-14, 16 and 20 have cylinders located up and away from abrasives . . . out of grit that scores piston rods and damages hydraulic components. By mounting cylinders away from the bucket Allis-Chalmers loaders lift more pay load . . . less dead weight.

extra lift and reach



The "Big Three" give you more *usable dumping height and forward reach* than units of comparable size. Because Allis-Chalmers measures loader reach from tires, you are assured of *effective reach* . . . reach that pays off when loading high-body trucks. The TL-20, for example, gives you a foot or two of *extra reach* for faster loading with less chance of damage to truck or loader.

pin-connected axles

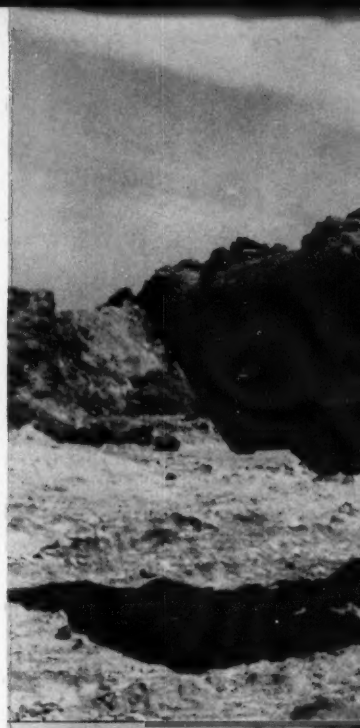


Axles on Allis-Chalmers "Big Three" loaders are pin-connected directly to the frame with 2-inch diameter steel pins . . . not automotive-type, U-bolt connections. In rough going, these units stay solid . . . axles do not roll or shift under load.

It's a fact...

ALLIS-CHALMERS
TRACTOR
LOADERS

give you 6 big bonus features...



YOU'LL "REALLY GO"

TL

TL

TL

WITH THE "BIG THREE"

5,300-lb carry capacity... 1 to 3-cu-yd buckets

14

For all-out savings, the TL-14 with *Tractomatic* transmission is the machine for you. On short-haul loading or stockpiling your operator selects the best working gear. By flipping a lever on the steering column, he goes forward or reverse without shifting gears. *For all-out production* on long hauls or scattered jobs, the TL-14 with full-power shift transmission fits the bill. Operators move from any one speed to any other . . . forward or reverse . . . on the go.

7,000-lb carry capacity... 1½ to 4-cu-yd buckets

16

The TL-16 is big enough for real production work . . . yet compact enough for hit-and-run assignments. It features the same design, construction and operating advantages found in the bigger TL-20. This unit handles the same kind of work as the TL-20, but on smaller scale operations. On all jobs, you can count on the "16" for fast, efficient service day in, day out.

9,000-lb carry capacity... 2¼ to 5-cu-yd buckets

20

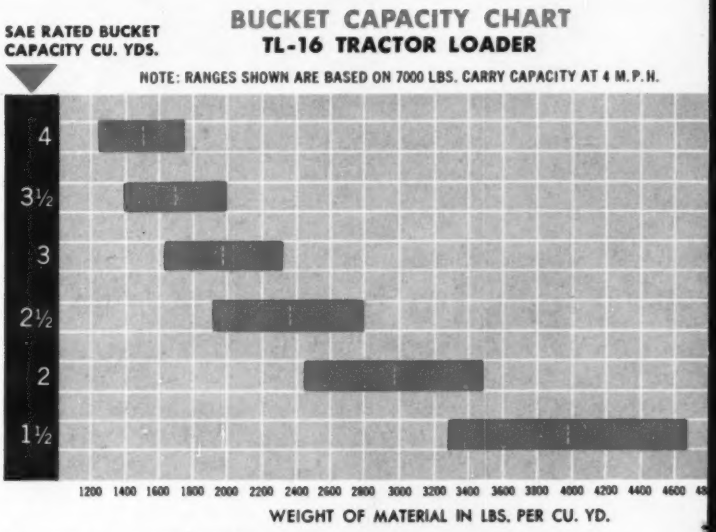
The 130-hp TL-20 is built for big, tough excavating and loading on construction, mining, quarrying or public works projects. Its many bonus features let you get more work done . . . easier. For example, the extra reach you get lets the TL-20 load big trucks faster and higher than other machines of comparable size.

Printed in U.S.A.

YOU choose the bucket best suited to your needs...

llis-Chalmers offers 18 buckets for hese 3 models. The TL-14, TL-16 nd TL-20 all provide 6 different ucket choices. You pick the best ucket size according to the *carrying apacity of the loader*, the *weight of aterial you handle*, and the *working onditions in which you operate.* Your llis-Chalmers dealer will help you elect the best profit-making tractor-ucket combination.

is TL-16 bucket chart shows how bucket es can be determined:


SAE RATED BUCKET CAPACITY CU. YDS.
BUCKET CAPACITY CHART
TL-16 TRACTOR LOADER
NOTE: RANGES SHOWN ARE BASED ON 7000 LBS. CARRY CAPACITY AT 4 M.P.H.
4
3½
3
2½
2
1½
1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200 3400 3600 3800 4000 4200 4400 4600
WEIGHT OF MATERIAL IN LBS. PER CU. YD.

TO SELECT CORRECT BUCKET CAPACITY FOR ANY OPERATION YOU MUST KNOW; 1, THE WEIGHT OF MATERIALS TO BE HANDLED AND 2, THE CONDITION OF THE OPERATING SURFACES.

our Allis-Chalmers dealer will put a tractor loader through its paces on your job. Take good look at all of the features that make these loaders the best buys on the market. et him set up a demonstration now. Allis-Chalmers, Construction Machinery Division, Iilwaukee 1, Wisconsin.

nove ahead with

ALLIS-CHALMERS

..power for a growing world

.A.

FIELD SERVICE—GMC 1½-ton field service truck is equipped with generator, welding machine, power tools, and compressor. All field trucks also have radios.

MAINTENANCE AT NIAGARA . . .

continued

PREVENTIVE MAINTENANCE—

Major shop equipment includes a Blount rock-bit grinder for 3 and 4-in. bits, a Black & Decker bench grinder for smaller bits, and an Owatonna 80-ton press.

A 16-ft-high portable A-frame mounting a 4-ton Yale chain hoist handles overhead lifting. It goes anywhere in the shop, but its main disadvantage compared to roof-mounted hoists is that an alley along the back of the shop has to be kept clear for it to move in. A 7-ton Austin-Western hydraulic crane handles lifts in the yard.

Mike would make a few changes if he were setting up the shop again. For one thing, he would like about two more working bays. He also would install a 12-in. lathe and would arrange to have the welding separated from the other operations. A thick bed of gravel fill under the shop would solve a bothersome drainage problem; at present the floor gets wet every time it rains.

General Maintenance

Two 1½-ton GMC field maintenance trucks are equipped with generator, welding machines, power tools, and compressor. They also are equipped with radios for fast service calls. Gull-DeFelice is the only contractor on the project that equips field maintenance trucks and lube trucks with two-way radio; the others limit radio equipment to the vehicles of supervisory personnel.

The maintenance crew on the day shift consists of eight shop mechanics, five shop welders, four field maintenance men, three lube men, two men on pumps, one man at the concrete plant, two drill doctors, plus superintendent, master mechanic, and shop foreman.

The night shift has six shop mechanics, one shop welder, two lube men, one man at the concrete plant, and two drill doctors.

Major equipment on the job includes 36 rear-dump Eucs, 8 Cat tractors, 2 Cat graders, 14 shovels and cranes.

Fred Sebastian is project manager, Mike Cazzolla is equipment superintendent, John Cazzolla is master mechanic, and Woodrow Maust is shop foreman.

Dependability is important at the world's largest aggregate plant. Story starts on page 143.

STARTED WITH 1 PRIME-MOVER

NOW OWNS 19 PRIME-MOVERS

THE STANDARD CONSTRUCTION CO., INC. MINNEAPOLIS provides its laborers with the power to produce. PRIME-MOVER is made specifically for laborers' use — to triple their output in handling of materials. Here is an immediate and positive way to cut costs. Why not do as this alert contractor is doing? Give *your* laborers the power to produce. Write for job estimating data and performance reports.

A PRIME-MOVER places from 12 to 17 cubic yards per hour on the average pour.

THE PRIME-MOVER CO.
PRIME-MOVER
MUSCATINE, IOWA

YOU CAN GET PROMPT FORD INDUSTRIAL ENGINE SERVICE EVERYWHERE

(including Hawaii and Alaska)

Whatever your job, wherever it takes you, you'll always find a Ford Dealer nearby to give quick assistance in solving any industrial engine problem.

Because this world-wide network of Ford Dealers offers speedy parts delivery and can arrange on-the-job service, your downtime costs are held to a minimum. Because Ford Dealers carry a stock of normal replacement parts, you need never invest in a large parts inventory of your own.

Also ready to serve you from coast to coast is a network of Ford Industrial Power Headquarters. They have the facilities and experience to repower your equipment, regardless of make, with a dependable, low-cost Ford Industrial Engine or Power Unit. Ford engines range from 134 to 534 cubic inches, including three highly efficient Ford diesels.

As a bonus, *all Ford engines offer a higher horsepower-to-weight ratio than ever before possible.*

To get the *right* engine for your application, call or visit your Ford Industrial Power Headquarters.

INDUSTRIAL ENGINE DEPARTMENT, FORD DIVISION, FORD MOTOR CO., P.O. BOX 598, DEARBORN, MICH.

West of Rockies write to:
- FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.
- FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

***DEPENDABILITY**—Channel Constructors supply aggregate to all the other contractors on the project. They can't afford to have any major breakdowns at their plant.*

MAIN SHOP—Channel's four-bay main shop has doors at both ends of bays. Shop takes care of earthmoving equipment. Aggregate plant maintenance is separate.

MAINTENANCE AT NIAGARA

Constant Care Keeps Plant Running

"WE HAVE TO SUPPLY aggregate for the whole project," says Ray Condos, Channel Constructors' superintendent for the world's largest aggregate plant, "so we do everything possible to maintain the plant in top condition so as to keep shutdowns to an absolute minimum."

It takes 160 men, including maintenance crews, to operate the plant. Maintenance crews work independently of the maintenance program for Channel's earthmoving equipment. It's a major job in itself to look after the 10,000 ft of conveyors, the crushers and screens, and the numerous electric motors that supply a total of 8,000 hp to the plant (*CM&E, March, 1959, p 90*).

Channel doesn't use any aggregate itself, but it supplies it to all the other contractors. The rated capacity of the plant is 2,000 tons per hr; the actual record delivery for one day is 38,000 tons. Product is 29% sand, 23% ¾-in. rock, 22% 1½-in. rock, 22% 3-in. rock and 4% 6-in. rock.

The plant operates two 8-hr shifts per day, six days a week. The 15 delivery bins are ready to discharge all the time. The third shift each day and all of Sunday are devoted to maintenance.

The biggest maintenance problem at the primary processing stage is the wear on impeller bars in the impact crushers. The tonnage passing this stage of the operation is very large and as a result, the maintenance crews have to adjust their hardfacing program for the impeller bars to fit in with the production rate at this stage.

Channel uses several brands of hardfacing with a Rockwell hardness rating of 50-65. They find that harder material tends to chip off.

BIG PLANT—It takes a crew of 160 men to operate and maintain the plant's screens, 10,000 ft of conveyors, and electric motors that supply 8,000 hp.

Chutes and Hoppers

The biggest job throughout the plant is replacing sheet metal on the chutes and hoppers. Replacing screen cloth also is a continuous chore.

Normally the crews replace a whole section of a chute or hopper because wear is relatively even. Sometimes they temporarily patch a hole, especially if the break occurs in the sand stage during an operating shift. The sand runs wet and a hole in a chute causes a messy leak.

As much as possible of the

DEPENDABILITY—

liner plate is bolted in place because it is easier to remove. The rest is welded. Bolt holes are countersunk and covered with hardfacing.

Conveyors

Conveyors are less of a problem, but they break occasionally because of impact and fatigue, and crews are on the lookout to spot weaknesses in advance. They try to prevent rock falling off a belt because it could get caught on the structure and possibly rip the belt.

During winter operations, ice build-up also can rip belts unless it is carefully controlled. Another problem in winter is frozen rollers that could wear themselves flat if not released. Sand operations required covering and heating during the winter because this is a wet operation.

Wash Water

A reservoir behind the plant reclaims most of the wash water. Channel buys water from the city and can't afford to waste it. Two 18 - in. Pettibone - Mulliken dredge pumps push waste sludge through pipes to various other parts of the project where it is used as fill.

The abrasive sludge that passes through the pipes wears mostly on the bottom of the pipes. Crews rotate pipe sections from time to time to extend the useful life of the pipe.

Parts Supply

Channel keeps at the plant a large inventory of all parts that might be needed to prevent a shutdown. Stocks of small parts are kept in each building. Larger parts are in a central warehouse. Ordering and storing parts is a full-time job.

On the operating shifts, foremen and mechanic-welders make minor repairs as needed. They also compile a list of major repairs, in order of importance, to be done on the graveyard shift. When they can, the mechanics cut wear plates and leave them in position for the graveyard shift to bolt in place. On each shift there is an oiler for each stage of the operation.

The largest maintenance crews are on the graveyard shift. They handle major repairs such as hardfacing breaker rods, repairing belts and conveyors, replacing plate in chutes and hoppers, and changing screens.

Ray Condos is plant superintendent. Gordon Smith is plant engineer.

Separate Maintenance For Earthmoving Rigs

Channel takes care of its earthmoving equipment just as carefully as it does its aggregate plant.

Maintenance crews keep a printed list of items to be checked

continued on page 148

FOR FAST, SAFE, CONCRETE FORMING

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From one source . . . every accessory you need for accurate, safe and dependable concrete forming. They're made to save time . . . reduce your forming costs.

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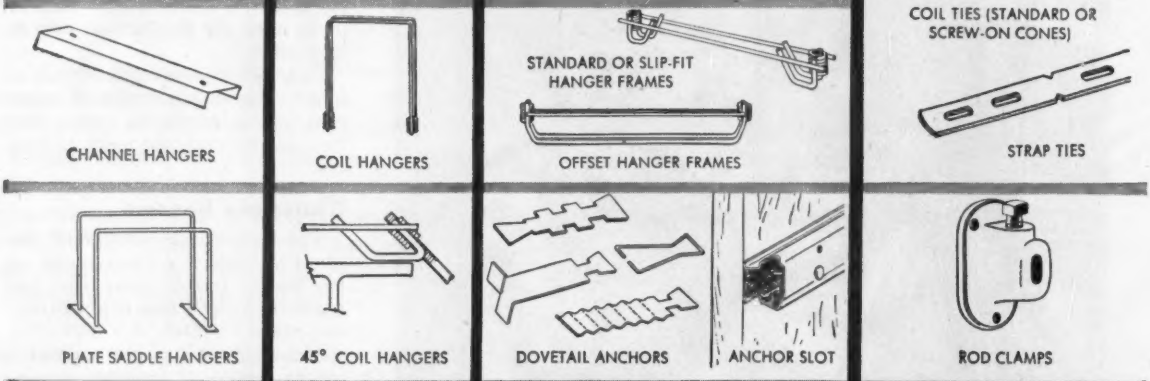

DAYTON SURE-GRIP HAS A COMPLETE LINE OF ACCESSORIES FOR EVERY CONCRETE FORMING REQUIREMENT

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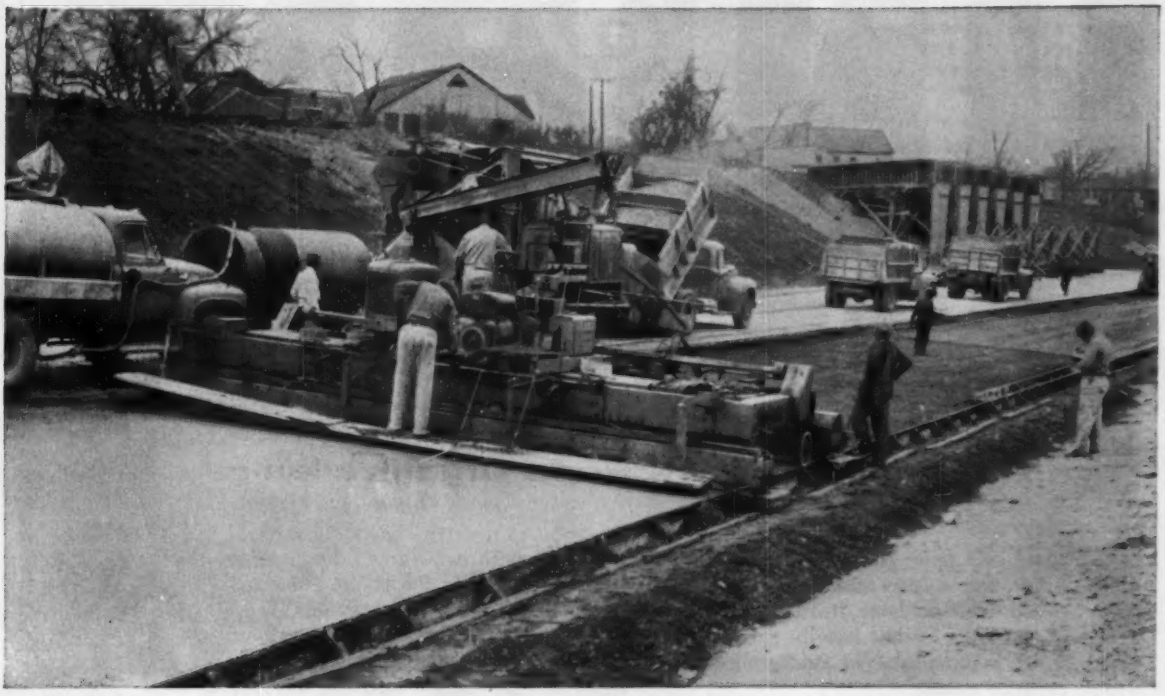
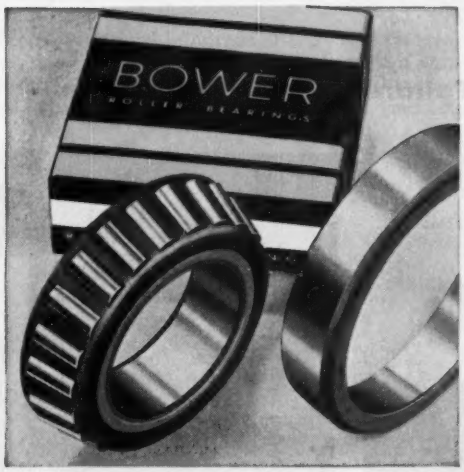


Bower paves the way to longer service life —keeps construction equipment on the go



Bower tapered and straight roller bearings run with less friction . . . give long, maintenance-free service

Bower roller bearings are three ways better: *1. Higher flange* gives rollers a large "two-zone" contact area to cut unit pressure on each roller, improve roller alignment, and reduce wear and "end-play"; *2. Large oil groove* insures positive roller-head lubrication, increases efficiency, and decreases wear; *3. Shoulder radius* helps the oil groove maintain an unbroken film of lubricant on roller heads. They all add up to longer bearing life and lower costs in heavy-duty operation.

Your Bower distributor gives the fastest delivery from a complete line of both tapered and straight roller bearings. Call him today.

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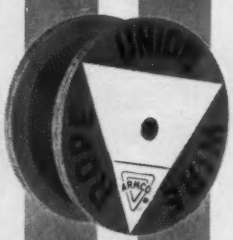


The High I. Q.* Wire Rope Organization

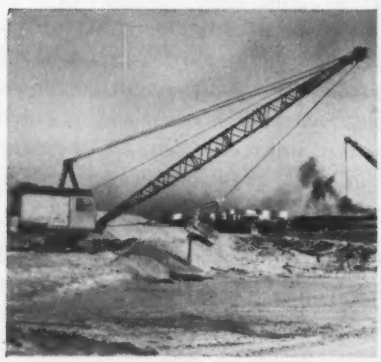
**Integrity — Quality*

More and more purchasing agents are employing a new concept in buying called value analysis. In it the integrity of the seller weighs heavily since it assures maintenance of uniformly high product quality.

Advanced procedures and equipment in Union's foremost laboratory enable our technicians to determine the life expectancy of wire ropes. Much of the time of our engineers is spent in the field checking to see that Union wire ropes live up to or exceed predetermined life expectancy rating under varying operating conditions.

In living with wire ropes and slings from the cradle to the grave, our engineers found new constructions were necessary. On many of the tougher jobs the life expectancy of standard wire ropes of the highest quality was too short. To equip the machines handling these tough jobs with the ultimate low cost wire rope and slings, Union developed the Tuffy family. Each member is a special construction tailored to fit a special purpose. For many years Tuffy's ultimate low cost wire ropes and slings have helped battle the rising cost of operation.

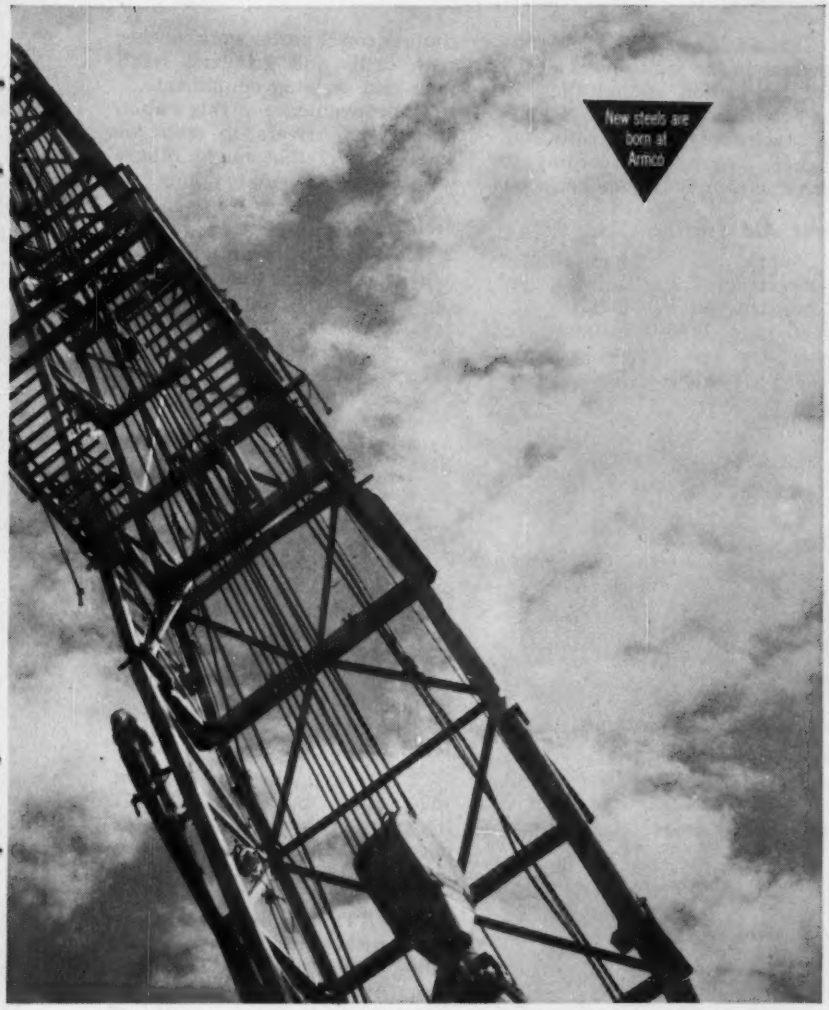
Tuffy Wire Ropes and Slings Are Tailored For Tough Jobs



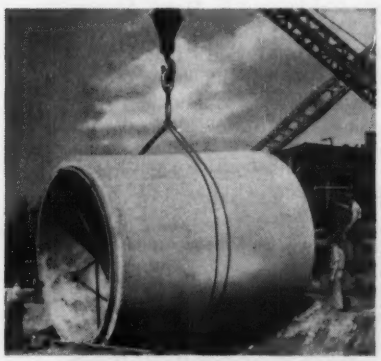
Tuffy Balanced Dragline Rope

Tuffy Balanced Scraper Rope

Tuffy Balanced Dozer Rope



Wire ropes travel hundreds of ton-miles on rotary oil drilling rigs lifting and lowering drill pipe and tools out of and into the hole. On the world's deepest oil well Tuffy Rotary Line handled the longest string of well casing ever run. The final live load totaled 700,000 lbs.



Union Distributors Are Selected On High I. Q. Standards

They know from experience that they can serve you with quality backed by integrity and enjoy a high expectancy for your repeat business. Look up your Union Wire Rope distributor in the yellow pages of your phone book. He is coached in helping you before and after the sale. Backing him up is an expert staff at a nearby Union Wire Rope branch office and warehouse.

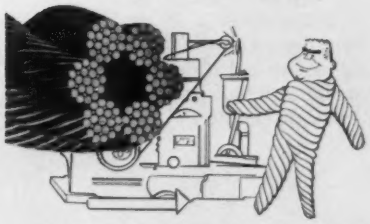
Tuffy Balanced Slings and Hoist Lines

3-C

Tuffy. Wire Rope Tips

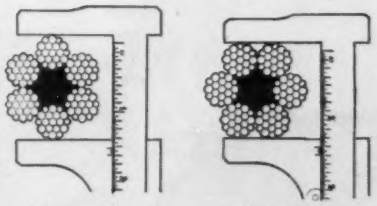
Money-Saving Information on the Use and Care of Wire Rope

Wire Rope is a "Machine" of Moving Parts



...and every part must fight destructive forces! A "look inside" a section of wire rope reveals a precision assembly of working parts. They are subjected not only to external and internal stresses, but also to heavy surface pressures and abrading. All these forces may be sustained while the rope is running at high speeds, and abruptly changing direction. That's why different uses require different constructions of wire rope.

How to Measure Rope Diameter



Right Way *Wrong Way*

There's only one right way: Use machinist's calipers, and be sure to measure the widest diameter. A slight shift of the rope in the calipers (shown at right above) might cause ordering an undersize rope.

How to Measure Tread Diameter

Easy, and important. Select the smallest sheave or drum to be used with the new wire rope, and measure actual diameter at lateral center (shortest dimension) of tread.

Would you like a copy of a booklet in which more than a score of Tuffy Tips like these above are reproduced. If so, write Union Wire Rope Corporation, 2270 Manchester Ave., Kansas City 26, Missouri.

UNION Wire Rope

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Southwest Steel Products

continued from page 144

DEPENDABILITY—

for each type of machine. Each machine has a weekly record chart that shows when each item on the check list was done. Machines get a weekly check in the field, a monthly check in the main shop, and an annual overhaul in the winter.

Lubrication and oil consumption records are thoroughly maintained to help the mechanics determine when it is time to overhaul an engine.

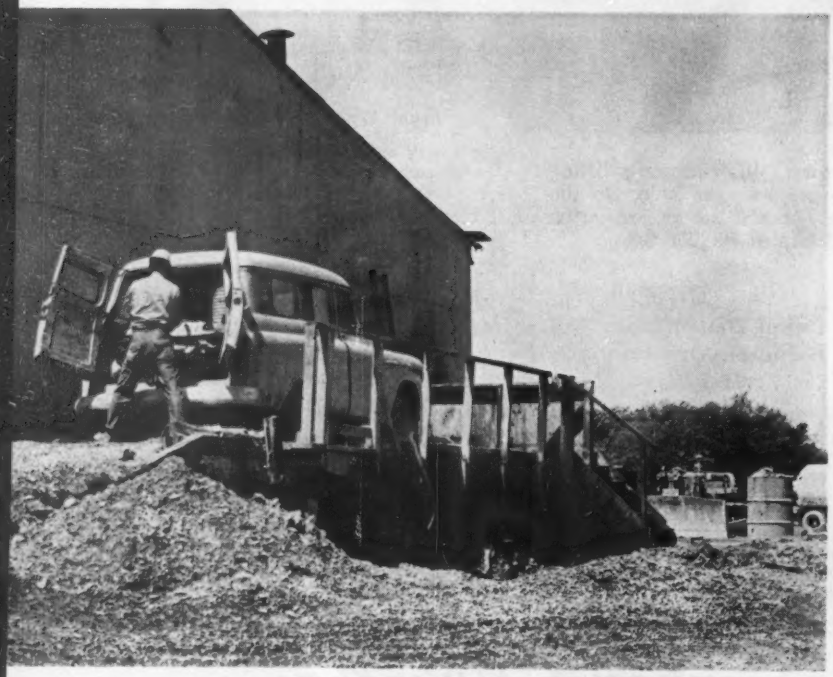
Channel is one of the few contractors on the job to have a central lubrication station that all the vehicles visit once a day. Each vehicle is greased daily. Oil changes are made according to manufacturer's recommendations.

First Aid Station

Channel has a unique setup in their vehicle "first aid station." It consists of two 30-ft trailers, located near the lubrication shack where all the vehicles pass at least once a day. The trailers contain small parts, workbenches with drills and grinders, small tools and welding equipment.

The convenience of this station encourages drivers to stop for small repairs that might otherwise be postponed too long.

FIRST AID STATION—Two 30-ft trailers, located near lube shack, are equipped for minor repairs to vehicles. Trailers contain small parts and tools, and welding equipment.



GREASE PIT—Built-up ramp and grease pit, located at one end of the main shop, provide lubrication facilities for small vehicles. Heavy equipment is lubricated in the field.

Field Trucks

Channel also maintains five field maintenance trucks to catch small repairs. Neither trucks nor first aid station attempt very big jobs, partly because they don't have the tools and partly because Channel doesn't feel that field operations produce the best work. Anything they might get dirty, they pull into the main shop to work on.

When an engine part is to be salvaged, they send it out to be built up, then reground to the proper size. They find that having parts of non-standard size in an engine confuses mechanics who personally are not familiar with the history of that particular machine.

Main Shop

Channel's main shop is a 50x100-ft Butler building. A 20x40-ft extension on one side contains parts storage and office.

There are four working bays with 16-ft doors on each end of the bay. This is the only shop on the project with doors on each side of the building. The back doors eliminate the problem of scheduling lengthy jobs for the rear of a bay so rigs don't get tied up.

Overhead lifts are handled by four Wright 4-ton hand-operated chain hoists. Major shop equipment consists of a Dake 50-ton press, a large Buffalo drill press, and a small Buffalo drill.

Equipment on the job includes 11 cranes and shovels, 23 tractors, 54 Euclids, 17 flatbed and service trucks, 11 Gardner-Denver drills, 5 graders, 3 scrapers, 19 pickup trucks, and 3 Joy 1,100-cfm compressors in a central shed.

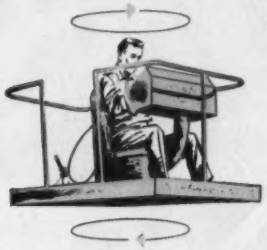
Lee Rowe is project manager, Lynn Arbogast is equipment superintendent, Basil Smith and Jim Borgen alternate as maintenance superintendents on the two operating shifts, and S. P. Perry is lube superintendent.

Tuscarora Contractors believe in keeping complete records.

Story starts on page 151

NEW self-propelled sheepsfoot roller gives QUICKER ROLLOUT

SWING 180° WITH REVOLVING SEAT AND CONTROL PANEL



GET "STRAIGHT AHEAD" OPERATION IN EITHER DIRECTION.

save 1½¢ (or more) per cu. yd.

with SERIES M 50-55

POWER PACKER

You'll be amazed at the *extra miles* of compacting you'll get hour after hour, day after day, with Series M 50-55 Power Packers! The reason is simple: This self-powered "sheepsfoot roller" works at a pace appreciably faster than its towed counterparts; and *you never turn around on the fill.*

More power is available for compacting because the Power Packer has to move no "idle" weight of a tow tractor. Each of its four roller drums is driven from the inside by its own electric motor and gear reduction. A diesel-electric generating plant automatically synchronizes the rollers at any of the infinite number of speeds you can select within the range.

Then, to travel in the other direction, merely swing the rotating seat and controls 180-degrees, spin a rheostat, and you're rolling! These quick-as-a-flash starts, stops, and reverses make working tight corners, or over slopes, quick and simple.

ELECTRIC DIGGER (Series L-50) is another Electric Wheel machine for contractors. It self loads 55 to 60 tons . . . drastically cuts dirtmoving cost.

It all adds up to more production per man hour — the surest way to stay competitive . . . and profitable. Learn how present owners are making Power Packers pay. Just let us know you're interested, and we'll send all the specifics. The address is:

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"NEW SIZE AND STRENGTH MARKINGS ON LACLEDE REINFORCING BARS

make them easy to identify . . . save time and construction costs."

Pick up any Laclede Multirib reinforcing bar. A rolled-in marking immediately tells you its size, strength and manufacturer. Laclede Multirib bars of high strength steel are rolled to conform to the two new ASTM standards: A-432 for 60,000 psi minimum yield point steel, and A-431 for 75,000 psi minimum yield. These bars can be used with assurance under the Ultimate Strength design methods included in the new A.C.I. building code. Bars of either 60,000 or 75,000 psi yield strength are identified by one and two longitudinal ribs, respectively.

These high-strength steels can contribute a saving of as much as 15% in the total construction cost of a concrete structure. The worker in the field can quickly find the right bar specified for the job; with the grade of steel well identified, many inspection and laboratory test charges may be eliminated.

For your next construction job, specify these time-saving, money-saving Laclede Multirib reinforcing bars.

6034

Steel

LACLEDE

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

GOOD RECORDS—*Tuscarora uses pencil and paper to keep track of machine performances and repairs required. They find this makes it easier to schedule the repair work without missing anything.*

MAINTENANCE AT NIAGARA

Daily Records Expedite Work Schedules

TUSCARORA CONTRACTORS
Tuscarora Power Plant

SHIFT DAY OPERATOR C. Wendling
EQUIPMENT HEAD HOUSE OILER Don Ongley

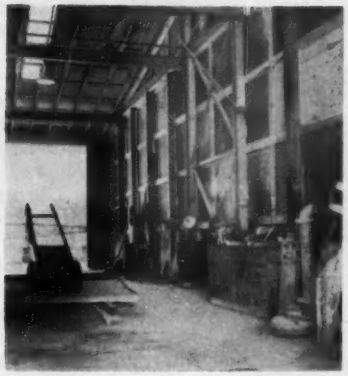
Maintenance Required
MECHANICAL NONE
ELECTRICAL NONE

Operation During Shift
REMARKS NORMAL

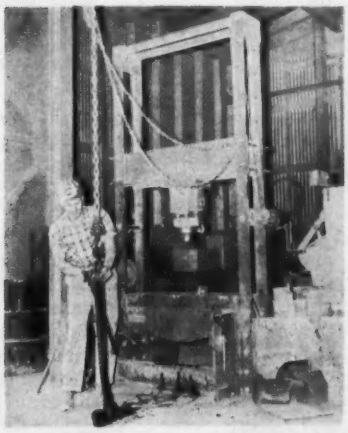
Greasing Performed
EXPLANATION HEAD & TAIL PULLEYS, TAKE UP PULLEYS, #1 BELT, #2 BELT, TOP SHAKER, FILLED OIL CUP IN HEAD HOUSE, OIL ON CHAIN, CHECK GEAR BOXES, WATER PUMPS.

Down Time
DELAYS: _____ TIME _____

TYPICAL FORM—Every shift a mechanic checks over the concrete plant and fills out this report, which then goes to main shop.



MAIN SHOP—Plywood partition blocks off all but the one bay of the main shop that was used during winter.



PRESS—Biggest item of equipment in the main shop is this OTC 100-ton press. Shop also has two drills.

"WE WRITE DOWN everything that needs to be done to a machine," says Del Lundmark, equipment superintendent for Tuscarora Contractors. "That way, we don't overlook anything."

At the beginning of each shift, one of the shop mechanics goes through the concrete plant and makes a list of things to be done. Another mechanic makes a similar survey of the dinkeys that haul concrete trains to the pump-generating plant. Lubrication men carry a pad and pencil and make notes of defects they find in machines. Operators on cranes do the same.

These notes go to the shop foreman or master mechanic who compiles them and organizes work for the day. The master mechanic on each shift puts the field notes together on a single form and passes the information on to the man on the next shift.

Tuscarora also keeps a complete log book of quantities and performance records at the compressor and ice plant, although it is not required by the specifications. They keep a similar log book for lubrication records on their machines.

The record keeping takes time. But it is a big help in organizing the work to be done and keeping track of machine performance.

Tuscarora does less repair work on the job than most of the other contractors. They find they can get all the service they need from local shops. Also, they have less equipment and much of it was new at the beginning of the job. They keep a small parts inventory on the job, figure they can get ½-hr delivery on most of the commonly used parts.

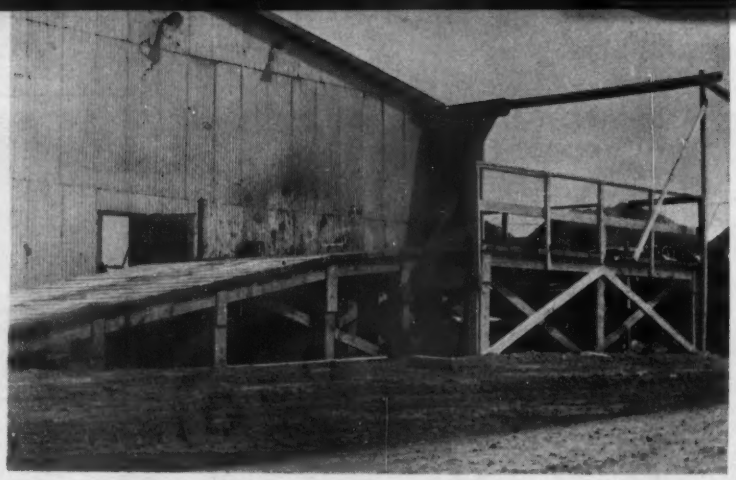
They were one of the few contractors who were able to get ahead of schedule last summer. This left them a leisurely winter to put their machines in top shape for this year's work.

Most of the earthmoving was finished last year, so their equipment fleet and maintenance program now are considerably reduced. They closed off all but one

GOOD RECORDS—

bay of their main shop during the winter. Now they work about five mechanics and two welders on each shift, plus a man on air tools, and one on lubrication of dinkeys and trucks.

They steam clean Euclid transmissions every day with a Homestead Jenny. According to Del Lundmark, they haven't had one transmission breakdown since the start of the job except for one that was replaced because of a factory defect.



LUBRICATION — Well-built timber elevated ramp for grease pit is located at one end of the 80x125-ft main repair shop.

The main shop is an Armco building 125 ft long and 80 ft wide. It contains two overhead hoists. Other major equipment consists of a 100-ton OTC press, a Buffalo vertical drill, and a Black & Decker portable drill.

Del has made a number of modifications to the machinery on the job. He installed automatic hooks on the gantry cranes that handle concrete buckets. He added automatic controls to the Garbro buckets. And he installed remote controls on the dinkeys. Each of these installations eliminates the need for a man.

Tuscarora hauls aggregate in five 25-ton Omaha gravel trailers pulled by International truck tractors. Del replaced the regular brake compressor with a larger one and used it to power a remote-controlled set of rams on the dump gates. The gates previously were hand-operated.

Equipment on the job includes 11 Eucs, 4 revolving cranes, 4 other cranes, 6 tractors, 4 Plymouth locomotives, 3 flatbed trucks, 15 pickups, two 22-ton bulk-cement trucks, 4 portable compressors, and a central 12,000-cfm compressor plant.

Ernie Snyder is project manager, Del Lundmark is equipment superintendent, Elmer Potts is shop foreman, Bob Morris is master mechanic on the day shift, Bill Comer is master mechanic on the swing shift, and Vic Miller is master mechanic on the graveyard shift.

Flexibility is important to MC&S on their powerhouse contract.

Story starts on page 155

NEWEST OF THE GREAT NEW MILLER WELDER/POWER PLANTS

AD-225-L GASOLINE ENGINE-DRIVEN AC/DC WELDER/POWER PLANT

This is as close to being "an all-around hand" as you're ever likely to find. For instance:

A-C or D-C WELDING. The AD-225-L produces 300 amperes at 30 volts a-c or 225 amperes at 30 volts d-c – both at 100% duty cycle. Ample open circuit voltage gives superior results with a-c, d-c or a-c/d-c electrodes.

METALLIC INERT GAS WELDING. Using the d-c side of the AD-225-L, and with new style hand guns feeding small diameter wire from spools, aluminum, mild or stainless steel may be welded by the MIG process. Power for the gun is provided by the 115 volt d-c outlet.

A-C POWER PLANT. As an a-c power plant, this model produces 7 KW of 115/230v single phase 60 cycle current.

AUXILIARY D-C POWER. While welding, the AD-225-L delivers 1 KW of 115v d-c which is ample for operation of flood lights, power tools, etc.

Complete information sent promptly.

miller ELECTRIC MANUFACTURING CO., INC., APPLETON, WISCONSIN

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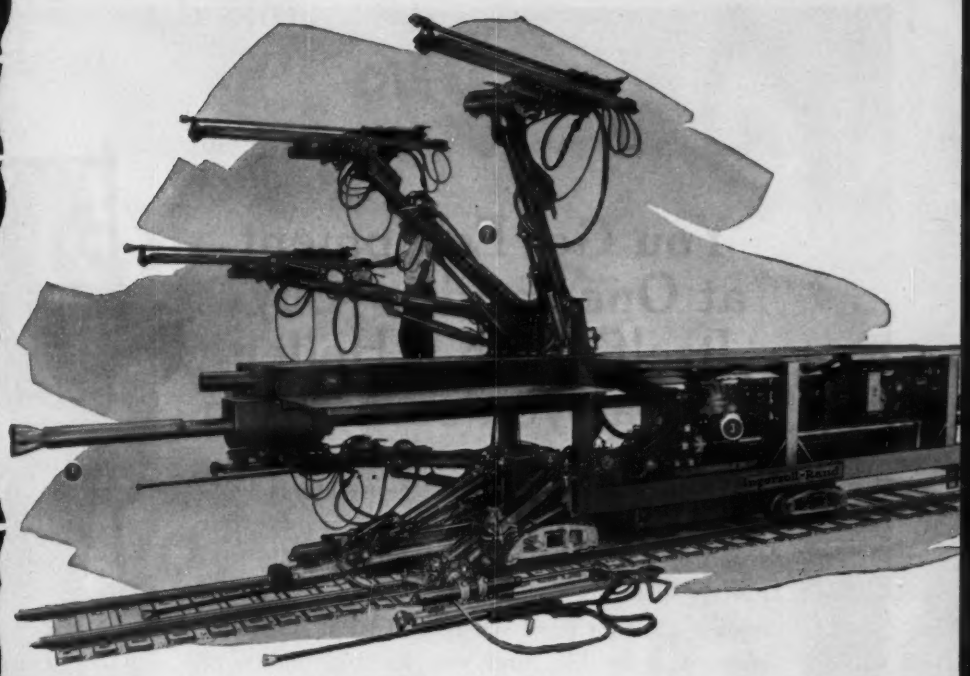


How Ingersoll-Rand's NEW

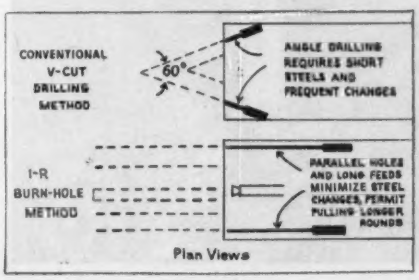
BIG BURN-HOLE METHOD

drives tunnels 20% to 30% faster

On seven major tunnel projects, the new I-R Burn-Hole Method has already *proved* its superiority – increasing the rate of advance as much as 30% over previous drilling methods. Here are three reasons why.

1. DHD Burn-Hole Drill – Heavy-duty I-R Down-hole Drills are *designed* for 6" to 10" diameter Carset bits, and are not overworked 4" bit machines trying to drill 6" to 8" holes. The I-R machines drill big burn holes fast, *without overloading*, even in the hardest rock. They stay underground – no costly delays due to broken couplings, drill steel, rifle bars, nuts, pawls, etc. As shown on the diagrams below, the I-R burn-hole method can eliminate steel changes and permit pulling longer rounds with no overall increase in cycle time.

2. I-R Hydra-Booms give smooth effortless hydraulic control of all blast-hole drill positioning, with maximum safety and dependability. And Ingersoll-Rand can supply heavy-duty drifters, reversible aluminum shell screw feeds up to 144" or air-driven chain feeds to any desired length.

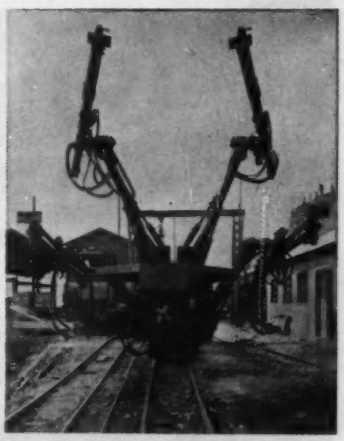

CONVENTIONAL V-CUT DRILLING METHOD
60°
ANGLE DRILLING REQUIRES SHORT STEELS AND FREQUENT CHANGES
I-R BURN-HOLE METHOD
PARALLEL HOLES AND LONG FEEDS MINIMIZE STEEL CHANGES, PERMIT PULLING LONGER ROUNDS
Plan Views

3. Fog Eliminator, designed and perfected by Ingersoll-Rand electrically heats the drilling air, eliminating fogging at the work face, promoting safer working conditions, providing better drill lubrication and saving concrete by getting rid of wild holes. In addition, preheating the air increases its pressure, providing additional energy for more efficient drill operation.

If you want to speed tunnel driving and cut drilling costs, look into the new I-R Burn-Hole Method. Ask your Ingersoll-Rand engineer for complete information today.

Current and recently completed famous tunnel jobs using I-R burn-hole method

Delaware Aqueduct – 14 foot bore – 2 Jumbos *(First major "highball" tunnel job ever to use the I-R "big burn hole" method and I-R Fog eliminator.)*
Italy–Three hydro-electric jobs–25 feet bore
France–Mont Blanc Tunnel–33 foot bore
Malaya–Hydro-electric job–12 foot bore
Wachusett Marlboro Tunnel–17½ foot bore
Chicago – Columbus Avenue Tunnel – 14 foot bore
Pyrenees – Hydro Electric Project – 12 foot bore



Tunnel jumbo with DHD Burn-Hole Drill and four Hydra-Boom mounted drifters.

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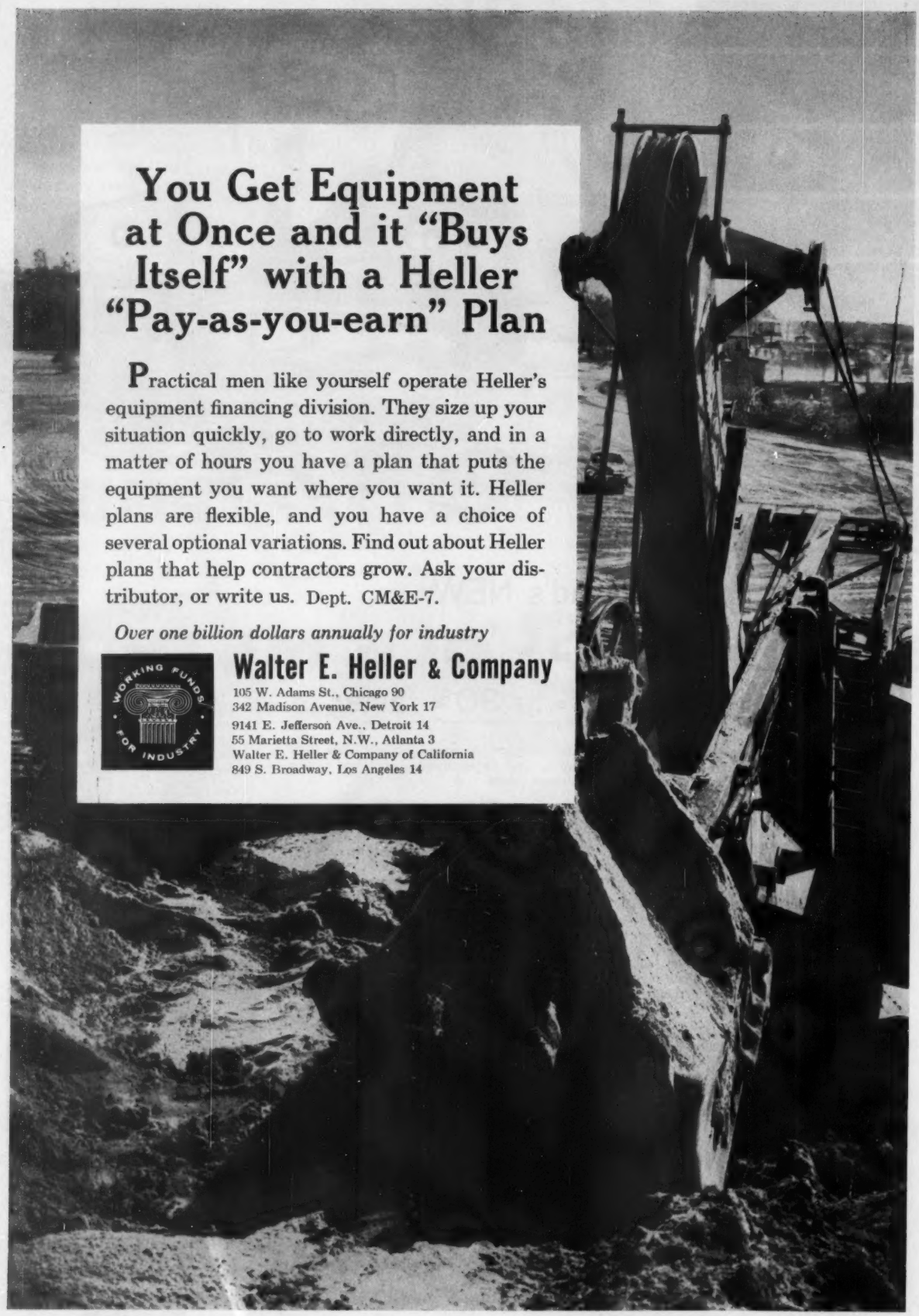

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FLEXIBILITY—*On their powerhouse contract, Merritt-Chapman & Scott needed a maintenance shop and program that is adaptable to a 9,600,000-cu-yd rock excavation operation as well as the concrete and structural operations on the powerplant itself.*

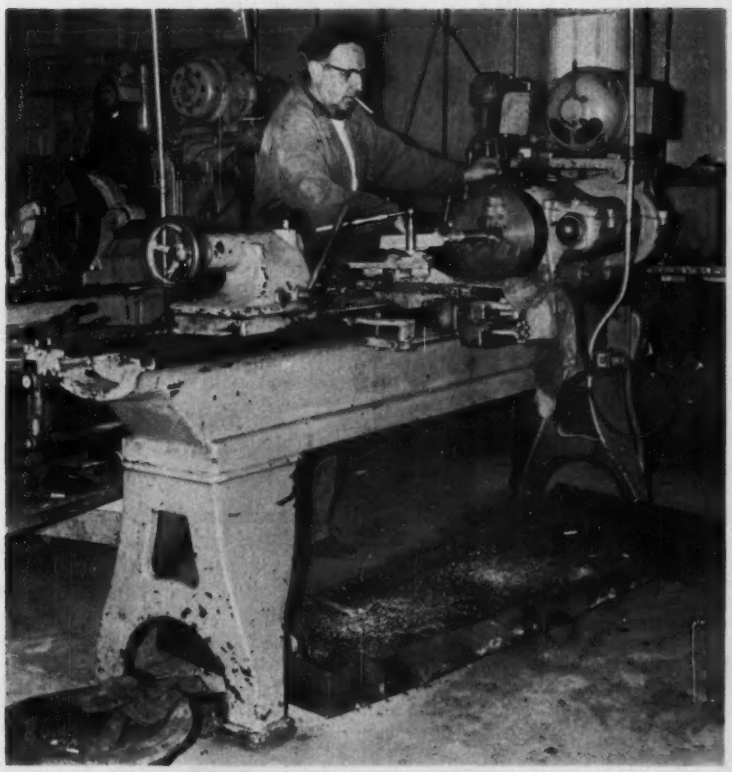
MAINTENANCE AT NIAGARA

Powerhouse Setup is Versatile

"WE REALLY HAVE two jobs here" says Ken Morefield, equipment superintendent for Merritt-Chapman & Scott on their powerhouse contract. "The ideal way to handle maintenance would have been to set up one shop for the earthmoving equipment last year, then start all over again and set up a different type of shop when we began work on the plant itself."

MC&S couldn't very well run this contract as two separate jobs. But they did the next best thing by making their maintenance setup flexible enough to handle both.

MAIN SHOP—Ten-bay shop is 240 ft long, 60 ft wide. A 40x240-ft parts building is behind it. Small extensions house electricians' shop and truck dispatcher.



SMALL LATHE—MC&S uses this lathe to manufacture shafts, bushings, and gears. A second lathe of about the same size performs similar jobs. MC&S builds many parts in shop.

They diversified many of the activities in separate buildings. For instance, last year they had two complete field lubrication sheds. Now, with a smaller fleet of rolling equipment, they have converted one building into an ironworkers fabrication shop. They still maintain one lube shop, a tire shop, and a separate steam cleaning building, in addition to the largest and best-equipped main shop on the project.

Varied Equipment

MC&S has had to cope with everything from the 86 earth-hauling units they had on the job last fall to the 20 cranes and 7 Revolvers they have now. They have to maintain 10 buses that haul men from the top of the Niagara gorge 1½ mi around a side-hill haul road to the bottom. Besides maintaining the giant cranes, MC&S also looks after the small tools and pumps of its subcontractors.

The main shop is an Armco

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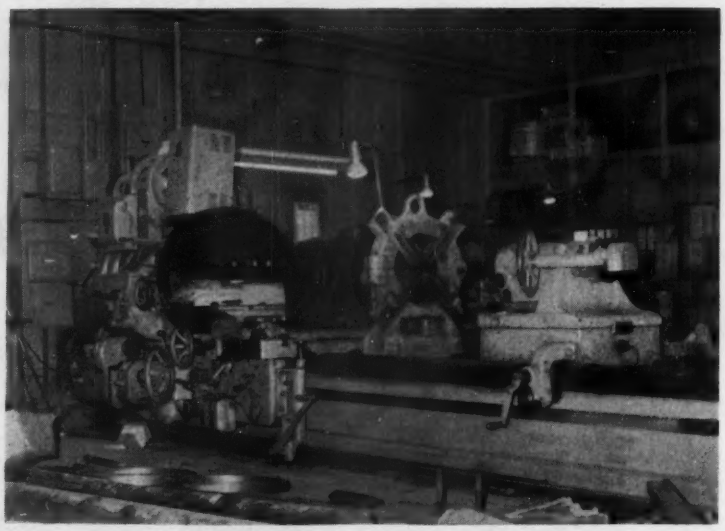

BIG LATHE—American 42-in. lathe handles jobs like reclaiming truck housings. Shop also has several drills, a shaper, a vertical milling machine, and two threading machines.

FLEXIBILITY—

building 240 ft long and 100 ft wide. A workshop occupies 60 ft of the width; the rest is taken up by parts storage. Offices and machine shop area are at one end of the shop, and welding bays are at the other. There are 10 working bays.

One bay is taken up by a 20-ft-square cage for the air-tool repair men. It is surrounded by a barbed-wire-topped wire mesh fence 8 ft high to keep parts and tools separate from the rest of the shop. Plywood sheeting outside the mesh keeps dirt from blowing in.

A 20x30-ft electric repair room has been added to one corner of the building. It contains four GE Tungar battery chargers and a Barrett B-57 rivet machine for brake work.

A Manning Maxwell & Moore 5-ton Loadlifter overhead crane runs the length of the shop and can reach within 4 ft of the doors. Three Austin-Western hydraulic cranes work in the yard.

There are three lathes in the shop. A 15-in. Hendy lathe handles shafts, bushings, and spur gears for the Revolvers. A Botwinik 19-in. lathe handles similar jobs. The third is a 42-in. American lathe. Job shops rarely have a lathe of this size. MC&S uses it for such things as reclaiming housings on trucks.

Other shop equipment includes a Buffalo No. 15 Speed Drill, an American Hole Wizard radial drill, a Gould & Eberhardt 24-in. shaper, a Brown & Sharpe vertical milling machine, and two Beaver threading machines.

The welding bays contain 12 Miller electric welding machines. They supply power to a series of live leads along the wall of the shop so welding can be done anywhere.

The shop makes more parts than most jobs. It carries stock steel and bronze for bushings. It can manufacture gears and shafts, turn crankshafts, and bore engine blocks.

On the day shift 22 men work in the shop. Six mechanics work in the field and two are in the two concrete plants.

Lubrication

MC&S's lube buildings feature high speed operation. The lower building, now converted, could lubricate 65 Eucs in an 8-hr shift. They changed oil at the same time; record production was 32 oil changes in a shift. Three grease men and two oil-change men worked on two rigs at a time.

Only one shop is operating now and it has less work to do. This gives the men a chance to examine each vehicle carefully and report on repairs needed. Each hauling unit comes to the lube

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AIR TOOL BAY—One bay in the main shop is fenced off with 8-ft-high wire mesh topped by barbed wire to form a 20-ft-square separated work area for air tool repair men.

MAINTENANCE AT NIAGARA . . . *continued*

FLEXIBILITY

shop once a shift. The day shift handles greasing and oil changes. The swing shift checks steering boxes, planetaries and differentials. The graveyard shift checks water pumps, fan belts, fuel filters, and air cleaners.

The existing shop has no grease pit because it handles many sizes of vehicles; a lowboy trailer with 16 wheels across the width could not drive over a pit. A pit is faster if the vehicles are all the same size, but the chain hoists and 12-ton jack that MC&S uses in the lube shed provide more flexibility.

Dick Curran, lube superintendent, finds that the cement and dust on the job cake so tightly that 4,000-psi air-powered grease guns won't get the grease into fittings. His crews use hand guns with boosters to get pressure up to 16,000 psi. Hand guns don't deliver as much volume as the air guns, but they develop much more pressure. Dick also insists that his oilers carry rags all the time and clean the guns and fittings every time they use them.

At the beginning of the job, alkali water was causing trouble with cylinder linings and water systems. Adding soluble oil to the water in the radiator has eliminated most of the trouble.

Tractors and cranes are lubricated in the field. MC&S has two mobile lube trucks. One was specially built by Savin Bros. and has four underslung 150-gal oil tanks with grease drums on top. It is fast to use, but its low ground clearance limits it to smooth terrain. For the rougher locations, MC&S uses a regular truck with the containers mounted on top of the body.

Lube trucks have a 200-gal water tank and a 20-ft hose. Instead of a pump, the tanks contain air at 5 psi which forces water through the hose. The air comes from a 100-psi compressor on the truck, and the operator has to be careful to reduce pressure to less than 7 psi so as not to damage the water tank.

Most of the lube equipment on the job is supplied by the Lincoln Engineering Co. Lube products are supplied by Texaco.

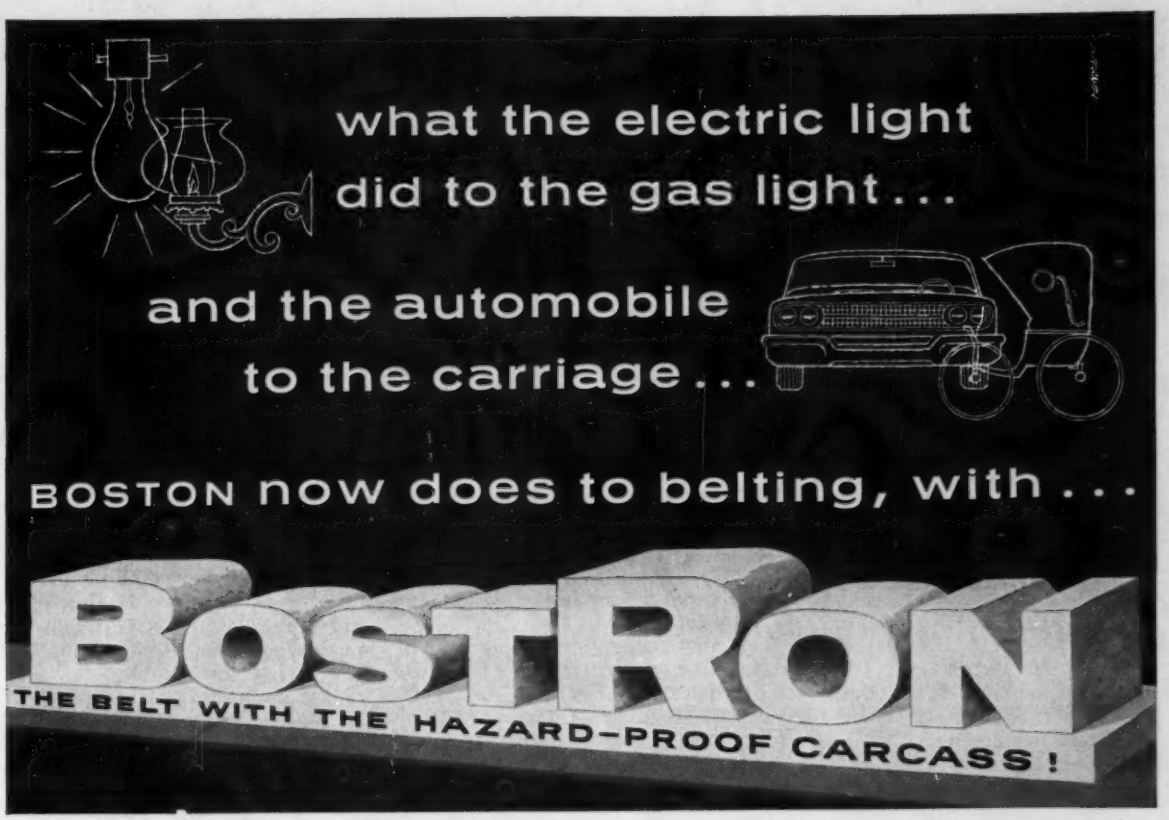
Tires

Like the other contractors on the job, MC&S consumes a large number of tires. A combination of steep grades, all weather operations, rough roads, and long hauls with overloaded vehicles plays havoc with tires. The rock on the job is not especially abrasive, but it is relatively hard and it breaks into sharp pieces that are tough on tires.

B. F. Goodrich, who looks after tire repairs for MC&S, is experimenting with a chemical compound designed to prevent cuts

LUBE SHED—Most rolling equipment, including pickup trucks, is lubricated in this shed. Lube truck services the cranes and shovels.

FAST WORK—Central lubrication shed allows for assembly-line type operations. One man greases this Mack truck while another checks the oil. Shed can handle 65 trucks a shift.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CLEANING ROADS—To clean roads of steel that might cause flat tires, MC&S built this magnet. Electric power is supplied by converted Hobart welding machine to two shipyard magnets underneath. Pile of steel at right was collected in about three weeks.

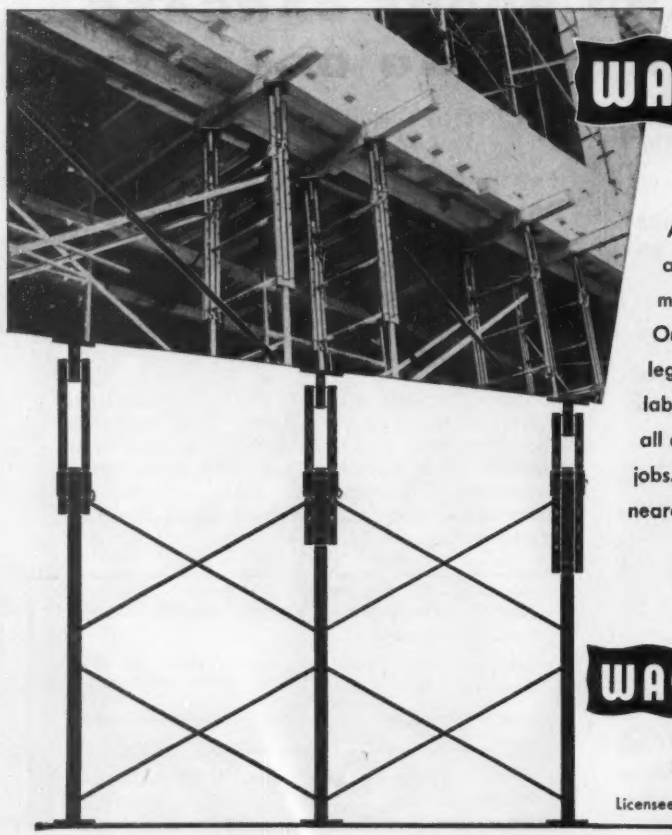
FLEXIBILITY—

in tires. They report some success so far. Other tire manufactures on the project are trying shredded wire mixes for the tires.

MC&S is constantly trying to improve and smooth its haul roads to reduce tire wear. To pick up loose steel, a big cause of flat tires, they built a portable electro-magnet that a truck can haul around. They converted a Hobart welding machine to supply the power and mounted under it two 2,000-lb magnets that they got from an east coast shipyard. The rig picks up a great deal of miscellaneous steel and nails that otherwise would find its way into tires.

Major equipment on the job includes 7 Revolvers, 20 other cranes, 40 Euclids, 18 tractors, 20 portable compressors, 6 dinkies, and 3 Joy compressors.

Bob Senn is project manager, Ken Morefield is equipment superintendent, Ben Hinston is master mechanic, and Jimmy Quinn is shop foreman.



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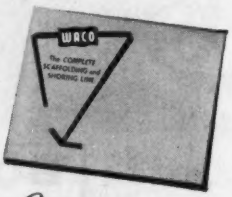

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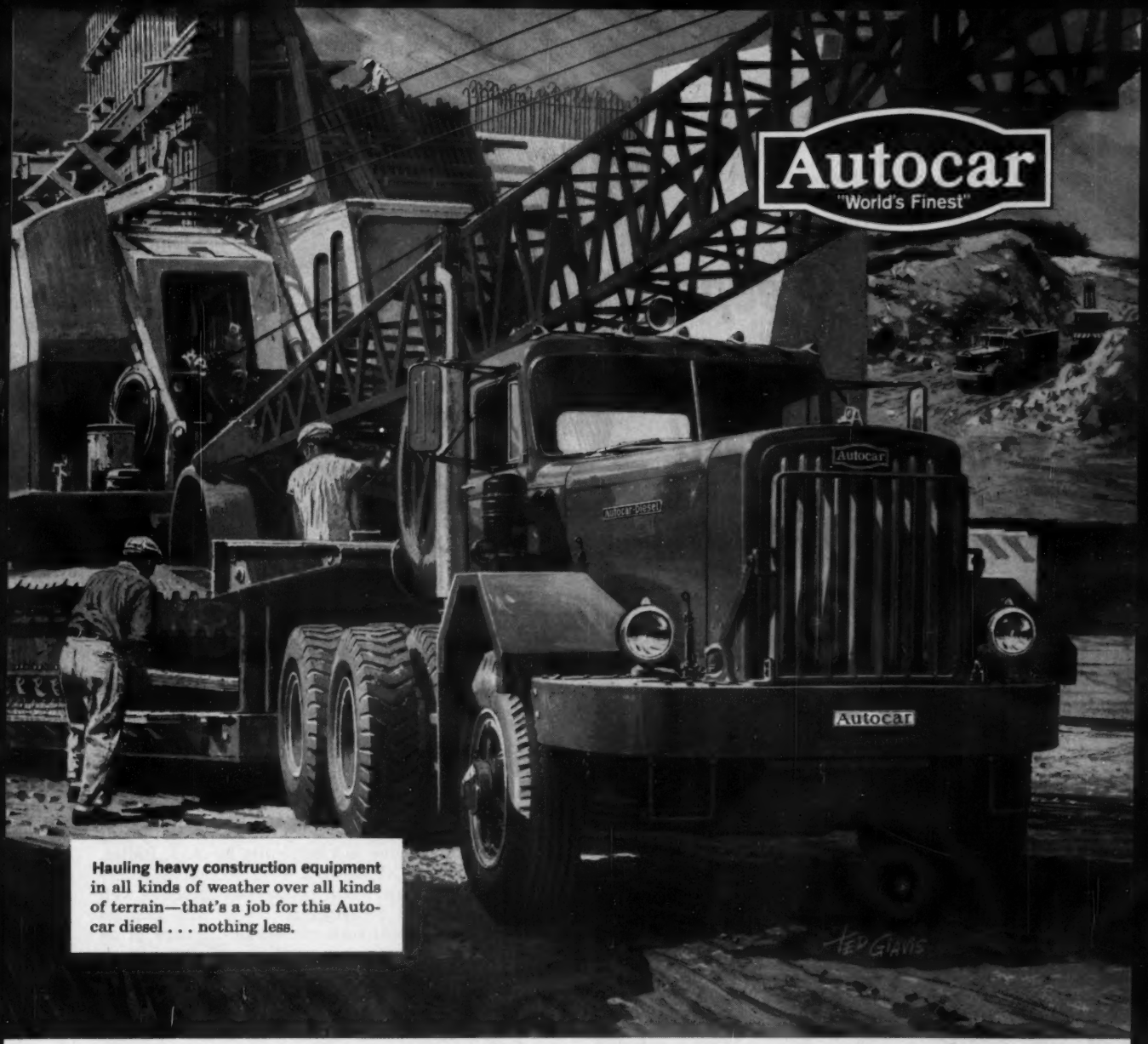
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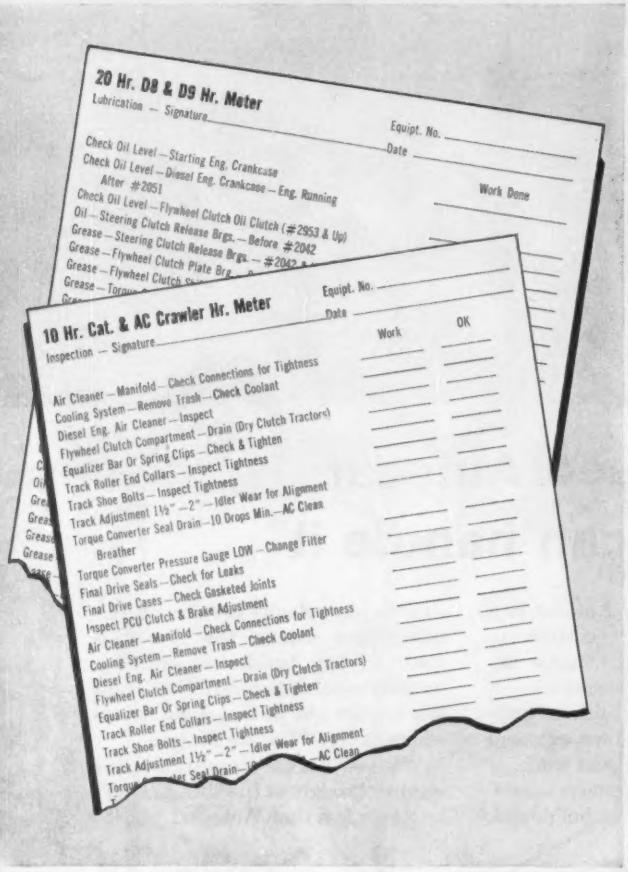
Foreman Keeps Tabs on Rigs, Coordinates All Job Maintenance

By WILLIAM G. MOONEY, Assistant Editor

FOREMAN CHECKS RIG—Preventive maintenance foreman Dale Springer follows check list in inspecting dozer. He'll then give equipment super a list of work to be done.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Lubrication — Signature
Equipt. No.
Date
Work Done
Check Oil Level — Starting Eng. Crankcase
Check Oil Level — Diesel Eng. Crankcase — Eng. Running
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Check Oil Level — Flywheel Clutch Oil Clutch (#2953 & Up)
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Grease — Flywheel Clutch Plate Brg.
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Date
Work
OK
Air Cleaner — Manifold — Check Connections for Tightness
Cooling System — Remove Trash — Check Coolant
Diesel Eng. Air Cleaner — Inspect
Flywheel Clutch Compartment — Drain (Dry Clutch Tractors)
Equalizer Bar Or Spring Clips — Check & Tighten
Track Roller End Collars — Inspect Tightness
Track Shoe Bolts — Inspect Tightness
Track Adjustment 1½" — 2" — Idler Wear for Alignment
Torque Converter Seal Drain — 10 Drops Min. — AC Clean
Breather
Torque Converter Pressure Gauge LOW — Change Filter
Final Drive Seals — Check for Leaks
Final Drive Cases — Check Gasketed Joints
Inspect PCU Clutch & Brake Adjustment
Air Cleaner — Manifold — Check Connections for Tightness
Cooling System — Remove Trash — Check Coolant
Diesel Eng. Air Cleaner — Inspect
Flywheel Clutch Compartment — Drain (Dry Clutch Tractors)
Equalizer Bar Or Spring Clips — Check & Tighten
Track Roller End Collars — Inspect Tightness
Track Shoe Bolts — Inspect Tightness
Track Adjustment 1½" — 2" — Idler Wear for Alignment

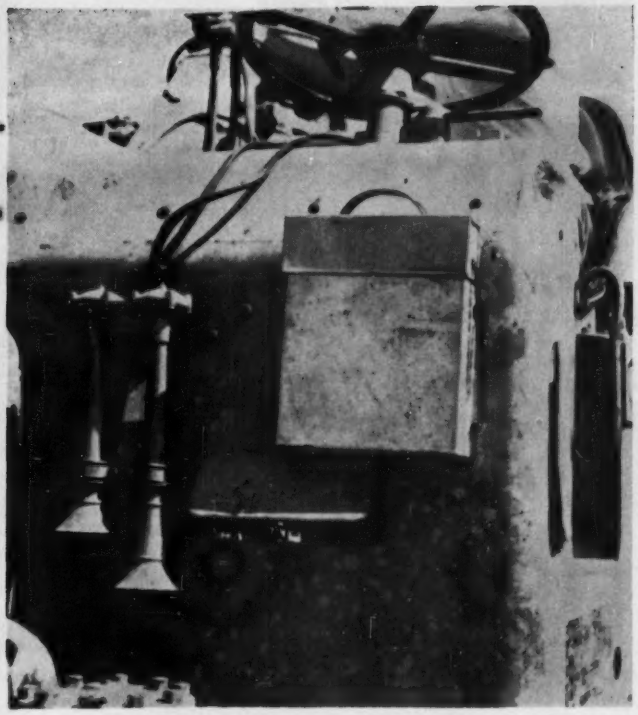
CHECK LISTS—Printed sheets list items that require inspection and lubrication at periodic intervals, starting at 10 hr operating time and continuing at 60-hr intervals.

A TOP-NOTCH maintenance program is cutting equipment downtime to a minimum for A. J. Baltes, Inc., of Norwalk, Ohio, on a 4-mi section of Interstate Route 75 just south of Dayton. It could well serve as a model for any contractor who realizes that high equipment costs caused by the lack of an effective maintenance program are slicing his already thin profit margin.

What makes Baltes' system different? For one thing, a preventive maintenance foreman coodinates all maintenance operations on the job. He records on a master sheet, listing all major pieces of equipment, the total operating hours racked up by each rig. By checking this list every day, he can tell quickly what type inspection and lubrication is due on each rig. And in this way he can lay out the day's work for his inspection and maintenance crews.

But here's the key to the system: On each rig, safeguarded by a metal box, is a book containing printed sheets that list items to be checked and lubricated at periodic intervals. The service crew removes the appropriate sheet and performs the listed operations, checking off each item as it is completed. At the end of the shift, all sheets are turned in as a record of work done.

Some of the books include sheets for a 10-hr period. But most of them start with a basic inspection and lubrication check list for a 20-hr operating period, and continue with sheets calling for increasingly thorough inspection and lubrication at 60-hr intervals. Thus a typical book would be made up mostly of 20-hr sheets for inspection and lubrication, each on a separate page, and several sheets for 60, 120, 240, 480, 960 and 1,920-hr periodic inspection and lubrication.



BOX HOLDS BOOK—A sheet-metal box attached to Caterpillar DW21 in front of the operator's seat holds book containing printed check lists. Box and book cost about $10.

The preventive maintenance foreman instructs the two-man inspection crew working directly under him as to which check list to use that day for each rig they will be going over. They get around to each rig about every other day. They tear the appropriate check list from the book on the rig and follow it item by item. All pages in the book are perforated for easy removal.

The check lists include two columns opposite each item to be inspected, one to indicate that some work is needed, the other to signify that it's O. K. For each item checked in the work-required column, the inspector writes on the back of the sheet a detailed note on just what is wrong and what has to be done.

The preventive maintenance foreman goes over these reports every day and makes a list of the critical items that require immediate attention. This list he gives to the equipment super in charge of the shop and the mechanics that staff it. If a rig requires major repair, they bring it into the shop. But ordinarily, mechanics go out into the field in service pickups to take care of the job on the spot.

They may not get to all rigs right away, but most of the time they complete the job pin-pointed by the inspection crew before a breakdown occurs, and that cuts downtime.

Keeping the equipment in shape is particularly important on this job because of a tight schedule. The $4-million contract calls for half the job to be completed this summer. By working two 9-hr shifts a day since starting the job last December, Baltes has just about wound up earthmoving on a 2-mi portion that must be completed early. They expect to start paving this month.

The job calls for a total of 2,300,000 yd of excavation. A Kolman Model 303 loader with a 60-in. belt handles the bulk of the material, feeding a fleet of 20 Euclid bottom-dump wagons. Loading a 14-yd wagon in as little as 45 sec, this workhorse averages about 12,000 yd per day. From 4 to 7 dozers work at the top of a 20-ft-high bank, pushing material into the opening at the top of the rig's hopper, which is almost buried in the landslide of material at the bottom of the bank.

A fleet of rubber-tired scrapers handles part of Baltes' excavation. It includes two Caterpillar DW20's, ten Caterpillar DW21's, and six brand-new Allis-Chalmers TS-360's. These big 27-yd rigs are getting a thorough job test. There are only about 20 of them scattered around the country, and Allis-Chalmers is keeping a close eye on them to correct any bugs that crop up while they are breaking-in. Two specially-trained mechanics representing the manufacturer are nursing the machines through this period.

The earthmoving rigs make an impressive array when they are lined up in rows at the end of each work day. Besides the scrapers and bottom-dumps, there are about 20 crawler tractors and 5 graders, bringing the total number of major units up to about 75. The grease crew really has to hustle to hit a majority of these rigs during the 5-hr break between shifts from 1 to 6 am.

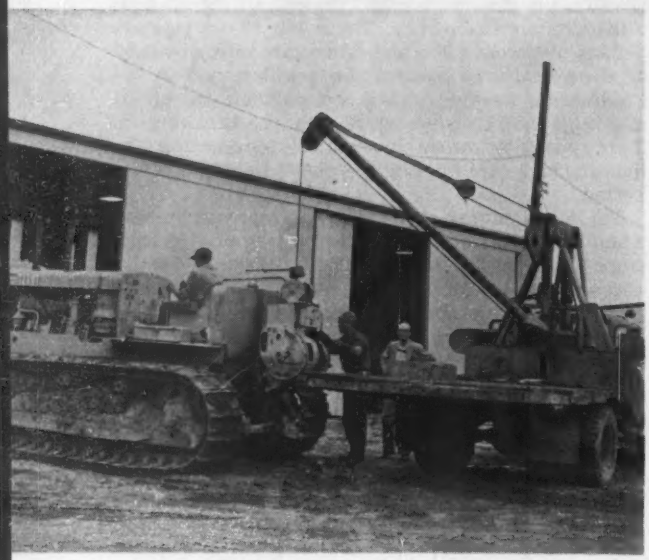
The three-man crew concentrates on the high production units such as scrapers and bottom-dumps during the layoff. The rigs they don't get then, they stop in the field the next morning.

During the operators' breaks, around 11 am and then again around 4 pm, they take hand grease guns to hit the spots that need more frequent lubrication on the scrapers. One point they seldom neglect is the trunnion bearing at the pivot end of the bowl arm. Grease in this bearing squeezes out quickly because the force of the pushers is transmitted to the trunnions, which also take the weight of the load.

But for most of the lube work the crew mans a brand-new grease truck—its modern equipment speeds up the job considerably. Mounted on a Ford F600 chassis with Napco front-wheel drive, the enclosed van housing the lube equipment measures 8x14 ft in floor area and provides 7 ft of head room. Made by Schafer Body, Inc. of Cleveland, the van contains Balcrank lubrication equipment along both sides and a Curtis 6-hp compressor in the middle. An Onan Model C96 generator provides electricity for

MOBILE LUBE RIG—Three-man crew on this brand-new grease truck hits each rig on job every day. They concentrate on high-production units during break between shifts.

Field Shop Can Handle Almost Everything



REPLACING WINCH—Another shop-built boom truck holds winch repaired in shop at rear of Caterpillar D8 dozer. Workman jiggles winch so that connecting bolts will line up.

CHERRY-PICKER HANDLES HEFTS—Workman with a 2-ton Ruger hydraulic crane places rear-end from truck on flat bed of three-wheel cart that serves as mobile work bench.

PUTTING TRACK BACK—Crew installs tracks on dozer in field shop. Baltes sends tracks to nearby dealer for build-up of pads; it's quicker than doing it themselves.

two lights on each side of the body and two mounted at the rear.

Along one side of the body are three 160-gal tanks containing gear oil, a tank for No. 30 diesel motor oil, a tank for solvent, and a 55-gal drum of chassis grease. On the other side are a 400-gal water tank, two 125-gal tanks containing detergent oil and hydraulic fluid, respectively, and another 55-gal drum of grease. (Baltes is using Sohio lubricants on the Dayton project.)

At the rear of the lube rig are reels, six on one side and five on the other, that hold 25 to 30 ft of hose. Also at the rear on the right hand side are air and water lines. Baltes has a similar grease truck on another job that has water hoses extending from each side instead of the rear, and the workmen find this arrangement more convenient. Otherwise the crew is well satisfied with their rig.

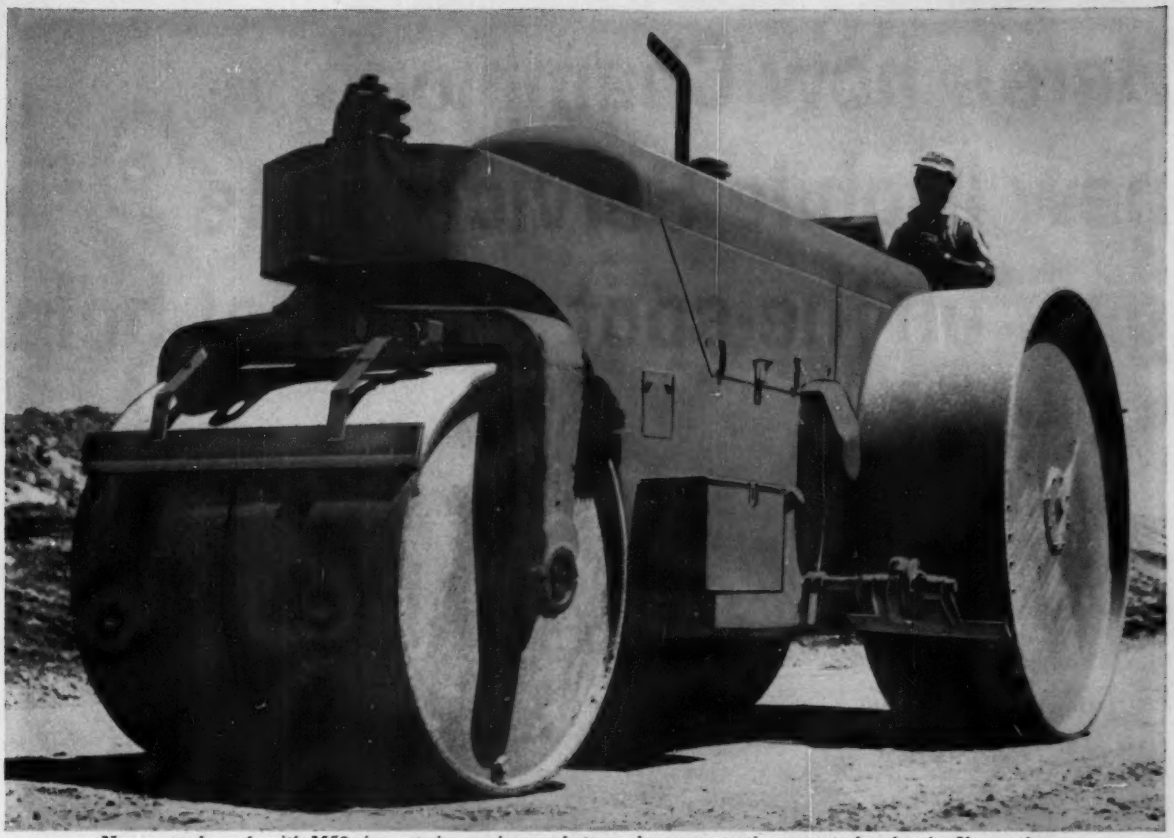
There are an inspection crew and two crews of mechanics on the job. They work two shifts, like the operators. Altogether the mechanics total 12 men, besides three welders and two parts men who work in trailers stationed alongside the shop.

The field shop consists of a 30x60-ft Armco prefabricated steel building with four bays. Headroom to the top of the four doors (two are 12 ft wide and two 14 ft wide) is 15½ ft, enough to accommodate all but the biggest rigs.

The steel frame is too light to support an overhead crane, but a Ruger 2-ton hydraulic cherry-picker crane handles lifts in the shop. A truck with a job-built 15-ft boom that can handle up to 3 tons does most of the lifting chores around the yard, where much of the work on scrapers is carried out. Also on hand as a utility rig is an Austin-Western hydraulic crane.

Shop equipment includes a light drill press and a truck-mounted steam cleaning rig. Equipment superintendent Don Baker can handle a wide range of jobs, including just about anything except engine overhaul or track and roller rebuilding. The main shop 160 mi away at Baltes' home base can handle this work, but sometimes it's faster to go to a nearby dealer.

Backing up this field program is a well-equipped shop at the contractor's base. Turn to page 169



New enamels made with *M50* pigment give equipment better... longer protection... control under-the-film rusting.

New! One-coat equipment enamels with built-in rust inhibition...

keep on fighting rust even when damaged in service

Now, for the first time, you can have the rust inhibition of a primer and the durability of a finish coat, combined in a single coat of enamel.

And what is more, the paint can be tinted to match most standard equipment colors.

What gives these new one-coat enamels their exceptional properties is a unique new type of pigment, *M50*® basic lead silico chromate. In this pigment, the active ingredient is basic lead chromate solidly fused to an inert core. Fused lead chromate has not only exceptional rust inhibiting action, but also superior resistance to weathering.

Greatly inhibits under-the-film rust creepage, too

As you've probably noticed, when ordinary enamels are nicked or damaged in service the rust that starts spreads under the paint in no time. As this rust creepage progresses, paint flakes off to open the way for further corrosion.

Exposure tests (see photograph at right) at National Lead Laboratories show that this damage is very sharply reduced when *M50* pigment is in the enamel.

Before you order paint again . . . look into these unusual new enamels. They can be made up by your regular paint suppliers in nearly all standard equipment colors.

How tests were made—Test enamels were applied over clean, cold-rolled auto body steel, scored, and then exposed to 5% salt fog for 300 hours. The two panels at top permit you to compare appearance of enamels after exposure. The two panels at bottom have loose paint removed so that you can compare the true extent of rust creepage under each enamel. Note also, the greater film strength shown by the *M50* enamel.

M50® an oncor® TRADEMARK *Pigment...A Development of* **National Lead Company**

General Offices: 111 Broadway, New York 6, N.Y.

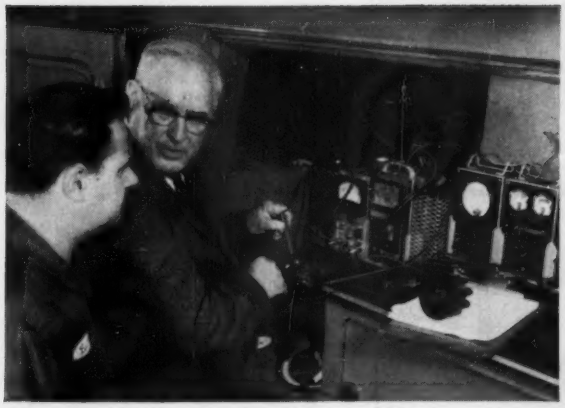
Here's how Champion's new Mobile Service Units give on-the-spot technical help to fleets!

Champion field engineers are now operating mobile engine-analysis labs like this—a new way to give your fleet the latest technical "know how." Here's how this exclusive Champion service helped a fleet improve performance and cut maintenance cost . . .

1. Called in on a request for technical help, Champion Field Engineer Bob Dale rolls his mobile unit into the maintenance garage of PEP Lines Trucking Company in Detroit, Michigan.

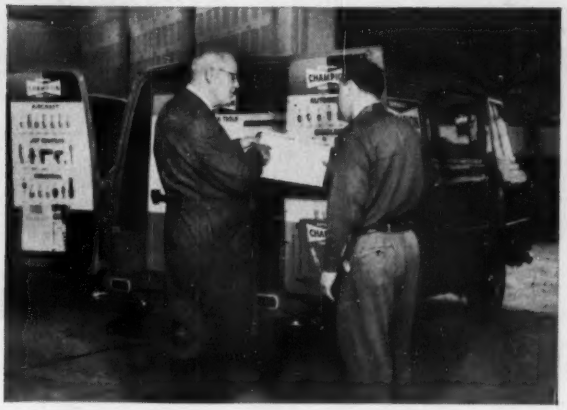
2. Preparing to run a complete engine analysis on a vehicle that has been causing the fleet trouble, Dale (l.) listens to Fleet Superintendent Bob Novak describe the problem.

CHAMPION SPARK PLUG COMPANY



3. Dale checks out the distributor. The mobile unit is also equipped with a dwell-tach meter, coil tester, exhaust analyzer, oscilloscope and other trouble-shooting instruments.

4. Dale and Novak use Champion Plug-Scope to check the spark plugs. This was actually a *double check* because PEP Lines' mechanics use their own "Plug-Scope" regularly in preventive maintenance.



5. Dale goes over the latest Champion plug types with Novak. He recommends an *auxiliary-gap* Champion type to solve a fouling problem caused by steady operation at low speeds in heavy traffic.

6. Using a special demonstration engine equipped with a dynamometer, Dale shows mechanics the effects of ignition timing and detonation on spark plug life and engine performance.

7. Mission accomplished, Dale drives on. Champion mobile units are available to serve fleets across the country. For information, call your Champion representative or write Champion Technical Services Dept.

DEPENDABLE

CHAMPION

SPARK PLUGS

TOLEDO 1, OHIO

FOR SPEED . . . POWER . . . ECONOMY

the MASSEY-FERGUSON 406

speaks for itself:

"HAVE DONE . . .

"CAN DO!"

THE POWERFUL MASSEY-FERGUSON BACKHOE

You get double utility out of the 406 when it is equipped with the popular Massey-Ferguson Backhoe. Not only can you handle all digging jobs with more ease, but you can even dig flush alongside walls, fences, buildings. This is a marvelous performer . . . that has no equal.

featuring INSTANT REVERSE

Here's why this Massey-Ferguson 406 Tractor Shovel says "Can DO" to so many different jobs: it's because it has an excellent record of "Have Done."
It can push tons of earth . . . fast and at low cost . . . when equipped with this matched angle dozer attachment. Or, it can load, stockpile, do clean-up work, scarify — even sweep because of the many integrated attachments available for it. This 1-cu. yd. (SAE rated) unit is equipped with Massey-Ferguson's unique Instant Reverse and Torque Converter. You change directions of travel by a simple touch of the toe — no shifting . . . no clutching . . . or levers to pull.
It provides excellent all-around visibility because the control zone is centrally located. Compare it for performance, versatility, and cost against any machine in its class. Ask your Massey-Ferguson Industrial dealer about it today!

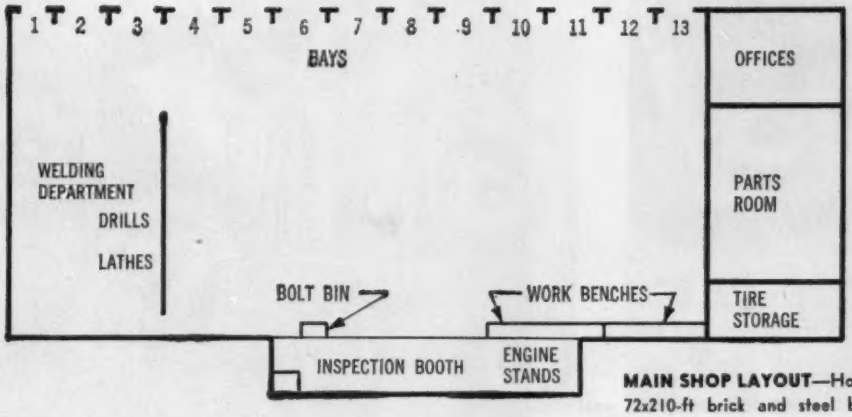
Why Wait? — Set a Date — We'll Demonstrate!

MASSEY-FERGUSON INDUSTRIAL DIVISION
Block 1000 South West St., Wichita 13, Kansas

Producing Sizeable Power for the "Sensational 60's"

MF60-22

Well-Equipped Shop at Home Base, Backing Up Field Maintenance Program, Is Helped by Good Record System



MAIN SHOP LAYOUT—Housed in spacious 72x210-ft brick and steel building put up five years ago by their own forces, Baltes' permanent shop at Norwalk, Ohio, is laid out with the emphasis on open work space. There are 13 bays unobstructed by columns.

BACKING-UP Baltes' field maintenance men is a well-planned, completely equipped permanent shop at their Norwalk, Ohio, home base. Here mechanics overhaul and rebuild rigs that break down after extensive field service.

The crew can work on as many as 15 rigs at a time in the spacious 72x210-ft shop building. Constructed five years ago, the building includes 13 bays of open shop space and an enclosed office area at one end. Behind the office is a parts storage area and a tire storage room. At the other end of the shop is a welding department flanked by a lineup of machine tools. The rest of the area is completely unobstructed.

Baltes plans to replace the present barn-type doors with overhead doors in all but one of the thirteen 14-ft-wide bays. Height of the doors will be 15 ft; headroom inside the shop is 17½ ft.

The steel roof trusses (fabricated and erected by Baltes' own crew) supported by the brick walls of the building are too light to hold an overhead crane. But Baltes gets along very well with a combination of two Ruger cherry-picker cranes, a jib crane with swinging boom mounted in the machine shop area, a Clark fork lift and a Hyster Karry crane. They hope to install a larger jib crane with a 40-ft swinging boom that will cover almost the entire welding and machine tool area.

At the rear of the building is a lean-to-like extension measuring 14x75 ft that houses an engine overhaul room. It includes three engine stands and a torque convertor stand, as well as mobile carts with trays for parts. In one corner is an injector repair booth. Work tables along the rear wall of the main building provide additional work space for men overhauling engines.

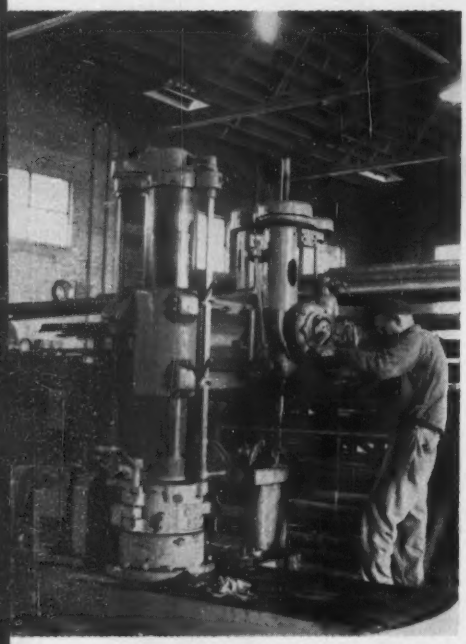
Also situated in this general area of the shop are three cold solvent tanks for cleaning parts and a Magnus heated tank for cleaning cylinder blocks and other large components. The shop is equipped with a Malsbary steam cleaner for stripping the gook off the exterior of rigs and getting down to bare metal.

continued on next page

WELL-EQUIPPED SHOP . . .
continued

An Array of Tools Is on Hand to Help

LATHE—One of three in shop, this lathe has a 14-in.-dia head and a 6-ft-long table. Others are 12 in. x 5 ft and 17 in. x 8 ft in size.



DRILL—This large radial drill is lined up with other machine tools in bay between welding shop and rest of open work area.

WELDING MACHINE—Workman welds wedge bars to cutting edge of scraper with Auto-Arc automatic welding machine.

Lined up in the bay containing machine tools are three lathes—12-in. x 5 ft, 14 in. x 6 ft, and 17 in. x 8 ft—a large radial drill, and a 100-ton Rodgers press. Electrical outlets along the floor of the bay provide 220-v power for these machines. Other outlets, both 110 v and 220 v, scattered along the walls of the shop provide juice for other power units, such as the three bench grinders, a pedestal grinder, and a 14-in. Kwikway boring bar. Overhead, three hose-reels for air and two for water are within handy reach of mechanics.

Separate Welding Area

The welding area is cut off from the adjacent machine shop area by a steel rack containing bars, angles, and plates. Besides a semi-automatic welder, it is equipped with an Auto-Arc automatic welding machine that Baltes has modified with a longer table. This unit welds wedge bars to cutting edges of scraper and dozer blades and can also handle build-up of tractor pads.

Outside, in a large yard, Baltes has plenty of room to store equipment and materials. Here the overhauled spreaders, finishers, and finisher-floats that will make up the paving train for the Dayton job (see p. 162) rest on steel cribs. In warm weather men work on the concrete apron in front of the shop, where a crew is now using a second 100-ton Rodgers press to straighten paving forms.

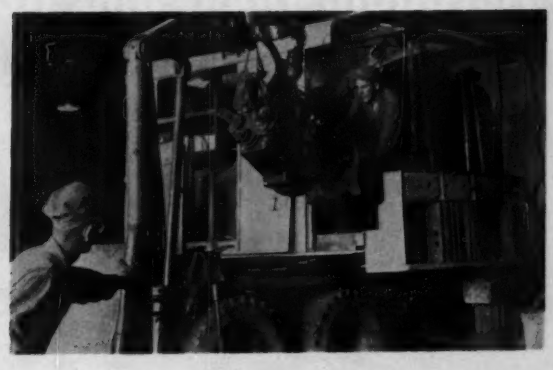
In winter the shop building is comfortably warm, in spite of its barn-like vastness. Heated by 36 natural gas infra red burners suspended from the roof trusses overhead, the building is warm from top to bottom. Connected into four separate groups so they need not all be turned on at once, the burners throw off heat, bouncing it off the floor and reflecting it all over the building to warm all areas evenly and efficiently.

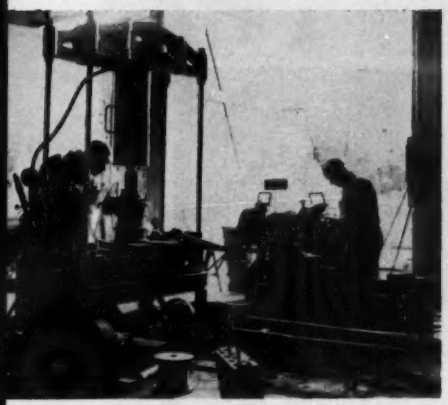
Modified Welding Machine

By rebuilding tractor rollers themselves, they save quite a bit. The home-made spindle mounted on their automatic welding machine holds six rollers at a time. After building up the roller path and its flange, they rebore the roller and press back in the shaft and bearing assembly.

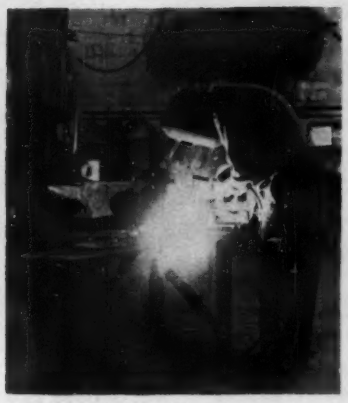
A special shop-built carrier comes in handy for moving the rollers around the shop. It consists sim-

ENGINE OVERHAUL—Tables and benches along rear wall of shop provide plenty of work space for mechanics overhauling engines. (Below) A 3-ton Ruger hydraulic crane hoists overhauled engine into cab of truck crane while workmen guide it into place.





MACHINE SHOP—Rodgers 100-ton hydraulic press pushes shaft into roller.



WELDING AREA—Cut off from shop by rack, welding area occupies two bays.

ENGINE ROOM—In shed containing engine stands, a cart holds parts of engine.

ply of a long pipe handle with two wheels mounted on an axle at the bottom end. Curved prongs welded to the frame hold the roller off the floor when the handle is tilted back.

For the past few weeks several of the shop crew have been busy preparing the pavers that will mix concrete for the Dayton job. These three Koehring dual-drum units have seen a lot of service, but careful attention to good maintenance practices has kept them in good shape. A welder was busy for several days installing new liners and paddles, but other than that the rigs required little more than a routine check.

Rubber pads from an Army half-track welded to the tractor pads of the pavers enable them to run over concrete pavement without damaging its surface. That's just an example of the modifications that Baltes has come up with to improve their equipment.

Their shop-built rigs often are better for particular conditions than anything comparable they could buy on the market. For instance, they built two water tanks for sprinkler trucks recently, each with a capacity of 2,800 gal. The tanks are rectangular in cross section and low in height, extending just to the level of the rear window of the cab.

This design provides several plus factors over conventional cylindrical tanks, such as two with a capacity of 2,000 gal that Baltes owns. For one thing, the center of gravity of the truck is much lower, increasing its stability. And besides its larger capacity, the low rectangular tank doesn't obstruct the driver's vision to the rear—an important safety consideration.

Modified Cement Silos

Still another modification that Baltes' crew is now working on is the addition of an air lift to three cement silos that will be part of the batch plant for the Dayton job. Workmen are installing a 4-in. steel pipe inside each of the 12-ft-dia cylindrical silos, welding steel struts to the wall to hold it in place. It's more common to add air lifts to the outside of silos, but Baltes wants to get away from the extra work of dismantling the pipe every time the unit must hit the road.

Baltes keeps track of all work done on rigs either in the field or at the home shop with a comprehen-

Passes Toughest of Tests *under all the down pressure and shock dozers can handle, failures ended by standardizing on*

Aeroquip Hose and Reusable Fittings

...from Job Report, Henry Bounds, Operator, C.W. Wright Cons. Co., Kermit, Texas

"With Aeroquip I can forget about hose"

Dozers are under all the hydraulic down pressure and shock they can handle when working in the Caleche rock of the Texas Permean Basin. Ordinary hydraulic hose can't take it.

Henry Bounds, operator for C. W. Wright Const. Co., didn't like the regular morning chore of checking for hose weakness, and, even then, getting frequent hot oil baths from failures with attendant downtime and expense. Now, he has replaced all ordinary hose with Aeroquip. So easy to do, too—all that was needed was a few feet of hose and a handful of fittings. No special tools. And replacements take everything Henry can give his dozer.

Reports like this on file prove you're in good hands when you consult with Aeroquip. Your Aeroquip distributor, a fluid line specialist, will give you our bulletin #ES 280, "Hoseline Installation and Routing Guide." He'll discuss, without obligation, various applications that might be helpful to you. His number is in the "Yellow Pages" under "Hose."

STANDARDIZE ON Aeroquip

REG. TRADEMARK

Aeroquip is so easy to use—inventory's just a few feet of hose and a handful of fittings.

AEROQUIP CORPORATION, JACKSON, MICHIGAN

INDUSTRIAL DIVISION, VAN WERT, OHIO • WESTERN DIVISION, BURBANK, CALIFORNIA
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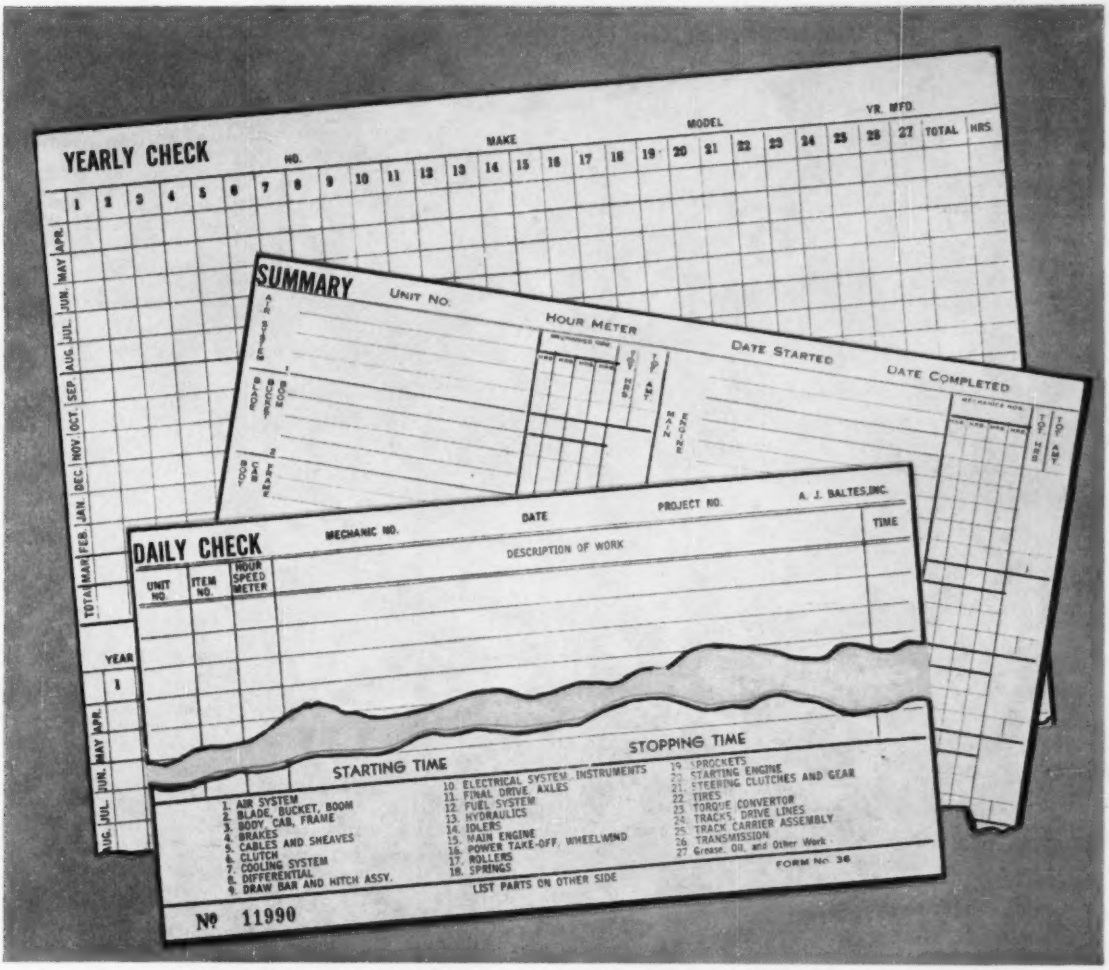
AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND CANADA



RECORDS PIN-POINT COSTS—A comprehensive record system breaks down the cost of maintaining each rig into 27 separate items covering different components of equipment.

sive record system that pin-points costs and puts out signposts towards greater profits. Each mechanic makes out a daily record of his work. The form he fills out lists the number of the rig, the operating hours registered on its meter, and a description of the work done, including the time required to do it. The work on any rig is broken down into 27 separate items: air system, body, brakes, cooling system, fueling system, main engine, final drive, steering clutches, torque convertor, and so on. On the back of this form is space for listing parts required to do the job.

An office man transfers this information from the daily records to a summary maintenance sheet for each rig. This form is broken down into the same list of 27 general items, with columns for the number of the mechanic who did the work, the total hours the job took, and the total cost—all on one side of the form. On the other side is a list of the parts required for each of the 27 items.

The clerk transfers this information, in turn, to a yearly record for each rig. It lists the monthly cost of maintaining the rig, again broken down into the 27 basic components. And it includes a total for each component as well as for the rig as a whole. This gives Baltes a good idea of what the maintenance program is costing them. Last year it amounted to about $650,000.

The records tell Baltes how well each of his mechanics does a job, and how well each rig stands up under work loads. Plotting the cost data helps make the significance more clear. By plotting repair dollars against accumulated operating hours, Baltes can figure out whether it is better to hang on to an old piece of equipment or to buy a new one.

By plotting average cost of maintenance per hour against the operating hours, Baltes can tell whether a rig is paying off or not. If this line slopes upward, as it ordinarily will, it means that maintaining a rig is becoming more and more costly. The ideal condition, of course, is indicated by the line sloping downward. That means that maintenance cost is paying off with increased operating hours. Or, to put it another way, downtime is being cut to the bone.

The effectiveness of Baltes maintenance program hinges not so much on what they do, but how they do it. It's the system that counts. Their records,

continued on page 176

7,000 hours on graders without a breakdown . . .

GULF MAKES THINGS

Highway construction on Maryland's John Hanson Expressway can be tough on equipment, reports Regal Construction Company of Forestville, Md. Snow or rain turns the clay topsoil to a bottomless slush. In dry weather, the ground hardens to the consistency of cement.

"When you're fighting terrain like this," explains Chief Mechanic Harry Hann, "7,000 hours of trouble-free operation on graders is quite an accomplishment."

Actually, Regal has been getting similar dependable service from all their equipment. They have to. The record late snows of last winter, and a September contract deadline, make every minute of downtime a minor tragedy. So far, a carefully planned P. M. program, based on Gulf engineering recommendations, has kept equipment operating at top performance.

"To make sure it stays that way," Mr. Hann tells us, "we change oil every two weeks, or 100-120 hours, and do a complete grease job every ten hours." Regal uses

Left to right: Rocco Luppino, President of Regal; Fredrick Pope, Jr., Gulf Sales Engineer; Harry Hann, Chief Mechanic; Dom Luppino, Vice-President. Gulf field engineering assistance is always as close as your telephone.

Regal President Rocco Luppino always directs operations right in the field. His insistence on a thorough P. M. program has paid off in equipment performance. Says Mr. Luppino: "We'd rather buy oil than new engines."

RUN BETTER!

Gulf® Super-Duty Motor Oil and Gulf® diesel fuel. "We find that Gulf fuel is low in sulfur content and is free of gum and water," says Mr. Hann.

On your next job, find out for yourself how quality fuels and lubricants, properly used, can cut costly mechanical delays and help you get greater yardage. Call your nearest Gulf office. For your free copy of the 88-page "Gulf Contractors Guide" — the lubrication and maintenance manual for heavy equipment — mail this coupon.

GULF

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Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.
Please send copy of "Contractors' Guide."

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GO-9-3239

continued from page 173

Modifications Improve Rigs, Make Tools More Versatile

CART CARRIES ROLLERS—Workman wheels track roller over to boring bar on simple carrier with long handle and steel wheels. Curved prongs at end hold roller off floor.

SPINDLE ROTATES ROLLERS—Shop-built spindle to hold rollers being built-up by automatic welding machine is in foreground. An extended table permits building-up pads, too.

PADS UPHOLSTER PAVER—Rubber pads taken from an Army half-track and welded to the crawler pads of this Koehring paver cushion the big rig so it can travel on concrete.

both in the shop and in the field, zero in the effort of the maintenance team where and when it's needed most. And they pin down costs, insuring that every repair dollar results in greater production.

Here are some of the men that help make this system function so smoothly: Charles Baltes, a son of the owner, is in over-all charge of equipment and maintenance program. He's responsible for initiating and developing much of the system as it now exists. Superintendent in charge of the permanent shop at Norwalk is John Esker, who has been with the company 30 yrs.

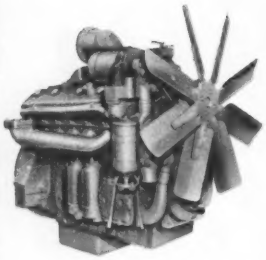
On the job at Dayton, Dale Springer is preventive maintenance foreman coordinating the program in the field. Equipment superintendent is Don Baker. Superintendent in over-all charge of the job is Don Bethel. His engineer is Robert Beerbauer. His timekeeper is Ken Collier. Dewey Ackerman is resident engineer for the Ohio State Department of Highways.

NOW-430 HORSES UNDER THE HOOD CURTISS-WRIGHT CW-226

26 cu. yds. struck–36 cu. yds. heaped

SOUTH BEND DIVISION
CURTISS-WRIGHT CORPORATION
SOUTH BEND, INDIANA
Distributed in Canada by Canadian Curtiss-Wright Ltd.

TURN PAGE



V-12 ENGINE...MORE POWER-MORE PERFORMANCE FOR THE CW-226

Now — with the 430 hp CW-226 you get production unmatched by any other two-axle scraper. An increase of 70 hp combines with the 26 cu. yd. struck, 36 cu. yd. heaped capacity of the mighty CW-226 to pile up bigger loads — faster cycles — greater profits than any competitive machine.

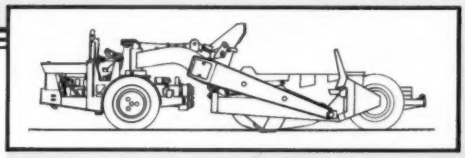
In addition to this top speed and performance, the big CW-226 incorporates exclusive Roto-Gear steer for perfect, effortless control — constant live power control unit and easy-loading, curved bowl design for top performance in the cut — Positive roll-out ejection for fast turn-around in the fill area . . . all adding up to greater profits for you with the new V-12 CW-226.

Call your C-W distributor for details on these and the many other features that make Curtiss-Wright the industry's highest producing scraper line.

CURTISS-WRIGHT—A complete line of high-performance earthmovers

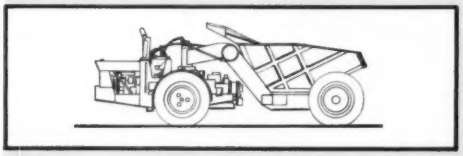
SELF-PROPELLED SCRAPERS

Four, 2-axle scrapers and a 3-axle scraper provide capacities from 7 to 26 cu. yds. struck, up to 36 cu. yds. heaped. A general brochure and individual specification sheets are available from your distributor.



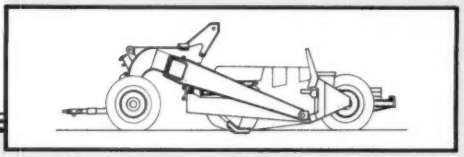
REAR DUMPERS

Three rear dumpers in capacities of 25 and 35 tons are interchangeable with corresponding scraper models. For details, request a general brochure or individual specification sheets from your Curtiss-Wright distributor.

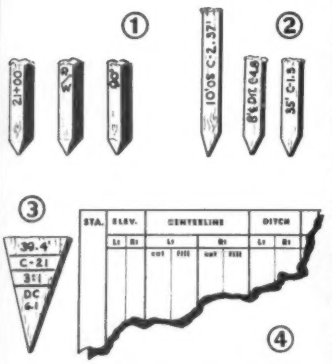


TRACTOR-DRAWN SCRAPERS

The CWT series of six tractor-drawn scrapers covers a capacity range of 8 to 30 cu. yds. struck, up to 39 cu. yds. heaped. Ask your distributor for a comprehensive specification sheet on the CWT line.

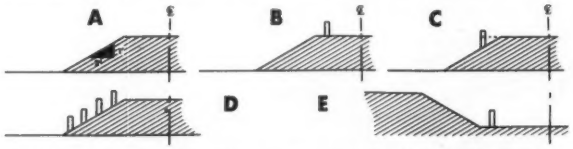


STAKES—THEIR USE ON AN EARTHMOVING JOB



Once the job is awarded, the owner's engineer will usually set certain stakes by which the dirt will be moved. The first among these will be the right-of-way stakes. These define the extreme limits of the property belonging to the owner. They are usually placed at every station and at every break in the right-of-way. (Fig. 1) These stakes usually show the station number and distance to the center line. Another class of stakes are information stakes. (Fig. 2) These stakes give construction information for structures such as head walls, culverts and clearing limits.

Other necessary information can be shown in a variety of ways. This information would include distance to center line, shoulder slope and back slope, height of fill or depth of cut, ditch center line and ditch cut. (Fig. 3) In some instances this information is listed on slope stakes set by the owner's engineer at the toe of fills or the top of the cuts. These are set exactly at the toe or top or else offset a specified distance to prevent their being disturbed. In other instances this is shown on special stakes offset from the center line. A third manner of handling this consists of referencing everything to either the right-of-way stakes or a special offset line and furnishing the contractor with "grade sheets" from which he can set all necessary construction stakes. (Fig. 4) On cuts and fills of any size the most important stakes are probably the slope stakes. These stakes are set initially at the toe of fills and the top of the back slope on cuts. From this point they follow the slope as the work progresses. They should be checked frequently enough to assure close control of the slopes. It is customary to carry each stake from the preceding stake. (Fig. D) This can be done with considerable accuracy, but any errors made would tend to be cumulative. Therefore, on cuts and fills of considerable magnitude these should be occasionally checked with an instrument and steel tape. This is particularly important on steep slopes where corrective action is very expensive. Slopes are generally indicated by a ratio of the horizontal distance to the vertical distance. (Fig. A) A 2:1 slope indicates that for every one foot of vertical rise the slope narrows two feet horizontally. In checking slopes, if the slope is too full but does not require corrective action, the stake will actually be set on the top of the fill and in from the edge of the fill the required distance to make the correction. (Fig. B) If the slope is hollow or sagging, then the stake will be set with a grade mark indicating where the dirt should fall. (Fig. C) The same principle but in reverse applies to cuts. Should the slope be too steep then the stake should be set out in the floor of the cut. (Fig. E) Should the slope be too full, then the stake should have a cut marked on it indicating the amount of material that should be removed to correct the slope.



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Illinois Route 125, five miles west of Springfield. Texaco Asphalt pavement laid by P. H. Broughton and Sons.

Illinois Route 88 near Walnut. Paved with Texaco Asphalt by J. P. Hollerich Company. Note asphalt center island.

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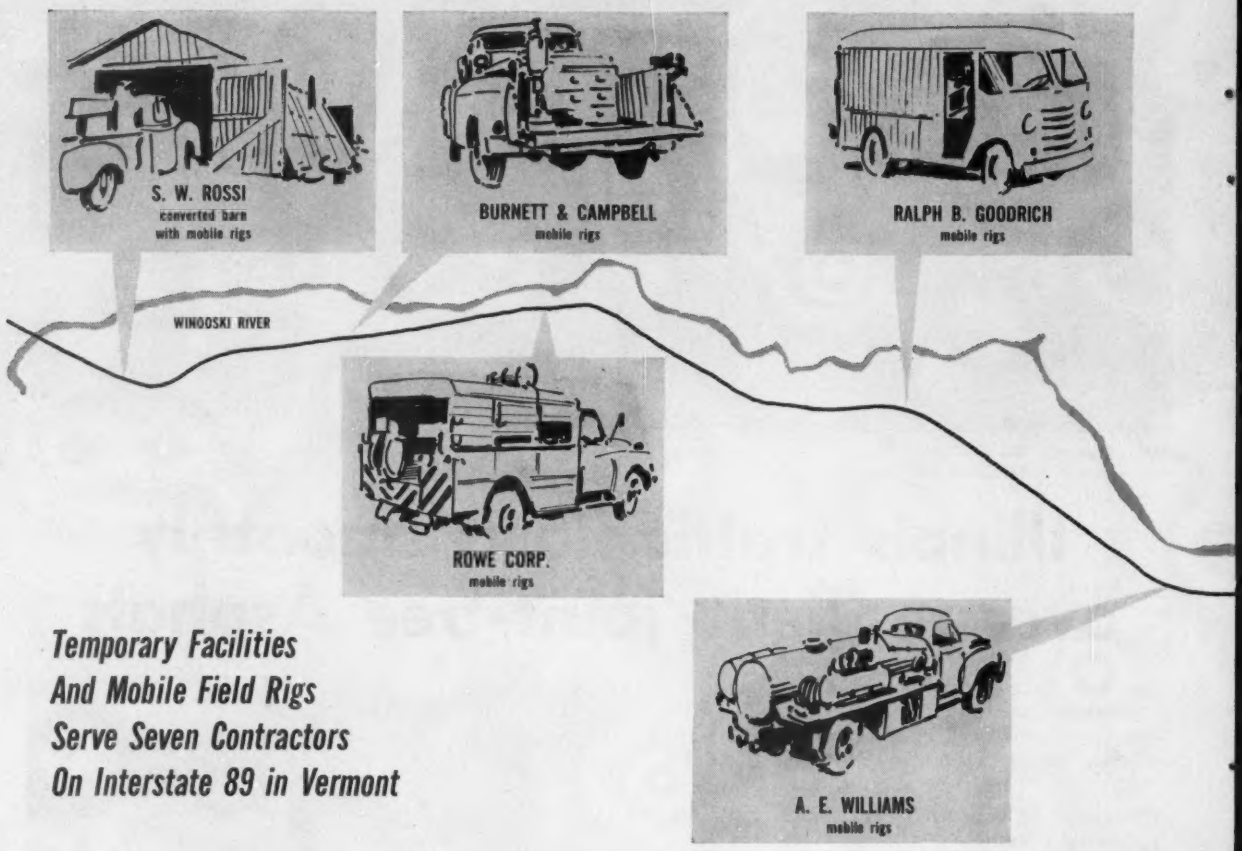


Temporary Facilities And Mobile Field Rigs Serve Seven Contractors On Interstate 89 in Vermont

On One Rugged Route, Seven Approaches

By RICHARD L. BODE, Assistant Editor

YANKEE INGENUITY marks the maintenance activities of seven contractors now moving dirt along a stretch of Interstate 89 under construction just west of Montpelier, Vt. The contractors include two local Vermont outfits, three medium-sized Massachusetts and Connecticut firms, and one large Connecticut-based construction company. The seventh firm is giant Morrison-Knudsen, and they're just getting set up.

Conditions confronting these contractors are similar. All are working on short sections, most of them less than 2 mi in length. And all sections are rugged, with deep cuts, high fills, and plenty of rock.

As is usual in this kind of a situation, maintenance setups are temporary and have mobile service rigs as their nucleus. Each contractor is equipped to handle repairs in the field right where the equipment breaks down. If a machine can't be repaired on the job, then it is hauled to the contractor's home maintenance shop or to a local distributor.

Only the large Connecticut-based contractor, Lane Construction Corp., has erected an elaborate maintenance shop on the job. M-K is planning a temporary, movable shelter. Another has adapted a building found on the job site. The rest work out in the open.

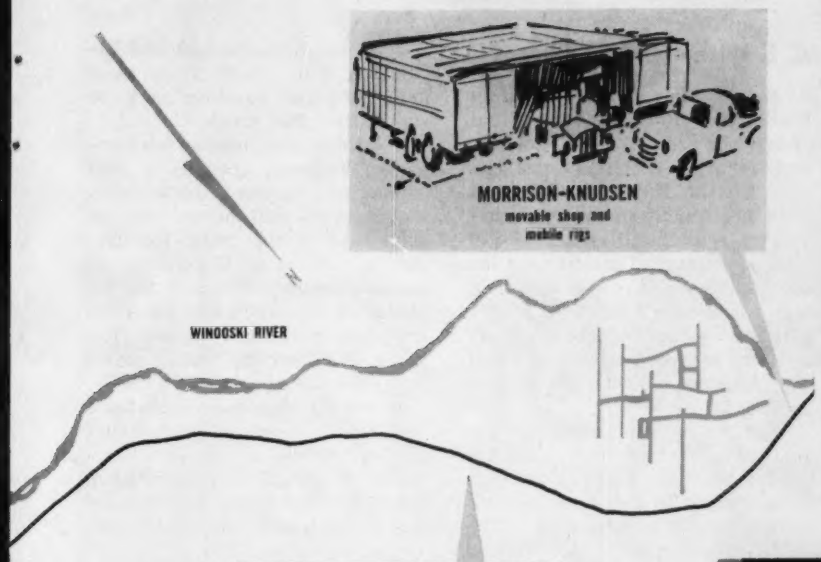
S. V. ROSSI—0.5 miles

Probably the most unusual shop belongs to S. V. Rossi Contracting Co. of Torrington, Conn. When they got on the job last year, Adolph Rossi, vice president and equipment supervisor, took a long look at a barn that was slated for the scrap heap because it was on the right of way. Main feature of the barn was its mansard roof. Rossi figured that because of its shape, the roof could be used for walls as well as roof of a maintenance shop. It was in good condition, made of timber framing and corrugated sheetmetal. While it wasn't designed for a shop, it had one major advantage. It was already there.

Rossi dismantled the 35x70-ft roof section, then put it back together again on a concrete slab that they had poured about 100 yd away. Their sole investment in the building so far has been for windows and doors. The structure has worked out so well that Rossi plans to move it to another job site about 125 mi away when it is no longer needed on this job.

Last winter Rossi reconditioned two shovels and a tractor under the barn roof, eliminating expensive hauls back to Torrington. A Silent Glow 150,000-Btu oil heater provided heat.

Other than the heater, the barn contains only a 50-gal grease drum with an air-operated 2½-in. Alemite heavy-duty grease gun, a Brunner 22-cfm



CONVERTED BARN—Linn half-track undergoes body repairs under the mansard roof section of an old barn that Rossi found on the site, dismantled, and relocated.

MOBILE WELDING RIG—For repair work, a ¾-ton GMC truck that mounts a 200-amp Hobart welding machine pulls up to the barn. The barn, itself, is lightly equipped.

to Maintenance

compressor, a small Millers Falls electric drill press, a workbench with grinder, and a storage room. Even when they work inside, Rossi relies mainly on mobile rigs that pull into the barn.

Rossi's field service setup consists of a combination lube and mechanic's rig, two truck-mounted welding machines, and a mechanic's truck.

Two men operate the lube rig, which has a 6x10-ft platform with a canopy top mounted on a 1940 2½-ton International truck. Lincoln lubrication accessories have been arranged on the platform by the contractor. Four 55-gal lubricant drums and five hoses, one for each drum and one for air, are mounted on the rear half of the platform. The front half of the platform carries a 200-amp Hobart welder, a 300-watt Homelite generator, and an Ingersoll-Rand 27-cfm compressor. Tool compartments are in 5-ft-long boxes at each side of the welding machine.

Rossi supplements this rig with a ¾-ton GMC pickup that mounts a 200-amp Hobart welder and a ¾-ton Ford with a 300-amp Lincoln welder.

Two master mechanics, two welders, one oiler-greaser, and one general helper comprise the maintenance team. They give equipment routine check-ups on a staggered schedule. Trucks—Rossi has about 15 hauling units—are brought into the shop every 100 hr; other equipment every 150 hr.

continued on next page

SHOP WELDING—One of two welders on Rossi's job works under cover to repair the truck body. Depending upon nature of breakdown, welders work either in the shop or field.

FUEL AND LUBE RIG—This 1½-ton Studebaker truck mounts a 700-gal gasoline tank. The racks on either side carry lubricants, an air compressor, and water tank.

HANDY SETUP—Mechanic gets tools from one of two boxes on sides of truck. Arrangement leaves ample room in body for parts, an acetylene outfit, and welder.

A. E. WILLIAMS—1.5 miles

A combination grease and fuel truck—the only rig of this kind along the route—does double-duty for A. E. Williams Construction Co. of Hartford, Conn. A 1946 1½-ton Studebaker, it carries a tank with two 350-gal compartments for gasoline. (A local dealer fuels diesel-powered equipment once a day on the job.) Racks on either side of the tank support a grease barrel, a small air compressor, and a 50-gal water tank.

The rig, which is operated by one man, has two 50-ft hoses for grease and air. Two 75-ft hoses that connect to the gasoline tank tuck away in a compartment under the racks when not in use.

The dual-purpose unit is supplemented by another small grease truck, a ½-ton Chevrolet. This truck carries grease for tracks and torque converters, plus light motor and hydraulic oils. The lubricants are in cans fitted with hand pumps.

Williams buys its fuel and lubricants from Gulf. They have one 1,000-gal gasoline tank to supply the fuel truck.

Bob Levesseur, master mechanic for Williams, operates a 1956 Chevrolet ½-ton truck that mounts two tool boxes, one on each side of the body. He carries a 240-amp Marquette ac welding machine smack in the center of the truck and an Airco acetylene outfit in a corner. The truck also carries parts, jacks, and other heavy tools.

A second mechanic operates a 1947 GMC ½-ton truck that carries only tools.

All equipment is lubricated at the end of every day. Oil changes and adjustments take place after 100 hr of service.

Williams has no shop, but if they take on more work along the route they plan to erect some kind of a shelter. Right now all they have is a 12x18-ft parts store room converted from a small building found on the job.

continued on page 185

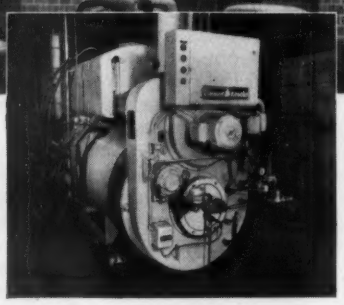
Better heat beats asphalt blending problems

Lizza Asphalt Construction Company, Oyster Bay, Long Island, cuts maintenance costs, gets top performance blending asphalt into black-top paving materials with Cleaver-Brooks Peak-Temp oil heater.

Heating 10,000 gallons of asphalt a day has been a lot easier for J. W. Slawson, superintendent of Lizza Asphalt Construction Company, since the installation of a Peak-Temp oil heater, Model CPT 500-12, in March, 1958.

"We don't have to worry about overtime costs," says Mr. Slawson. "The fully automatic operation of this heater, plus low-pressure operation, keeps manpower requirements down. Maintenance is low, and our records show operation is efficient. The unit has run continuously (more than two years) without appreciable trouble."

For safe, low-pressure operation and continuous, automatic heating to 480F, Peak-Temp has proved itself to be the economical solution to construction material and process heating problems. For details, write Cleaver-Brooks, Dept. H, 399 E. Keefe Ave., Milwaukee 12, Wisconsin.



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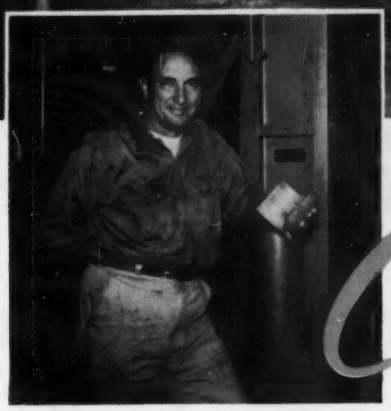

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C. A. Owens, one of the Southwest's leading engine rebuilders who services several of the large oil companies, is shown with one of the engines at the Vienna Field, Texas, pumping station owned by Christie, Mitchell & Mitchell. Mr. Owens has this to say:

"Any owner of a high-speed engine that is operating under continuous and heavy loads must have assurance that down-time will be cut to a minimum. An engine that is down isn't making money, whether it be in a pumping station such as this, or on any type job. You've got to use an engine bearing that can take it. We depend upon CLEVITE 77 to do the job—and it does."

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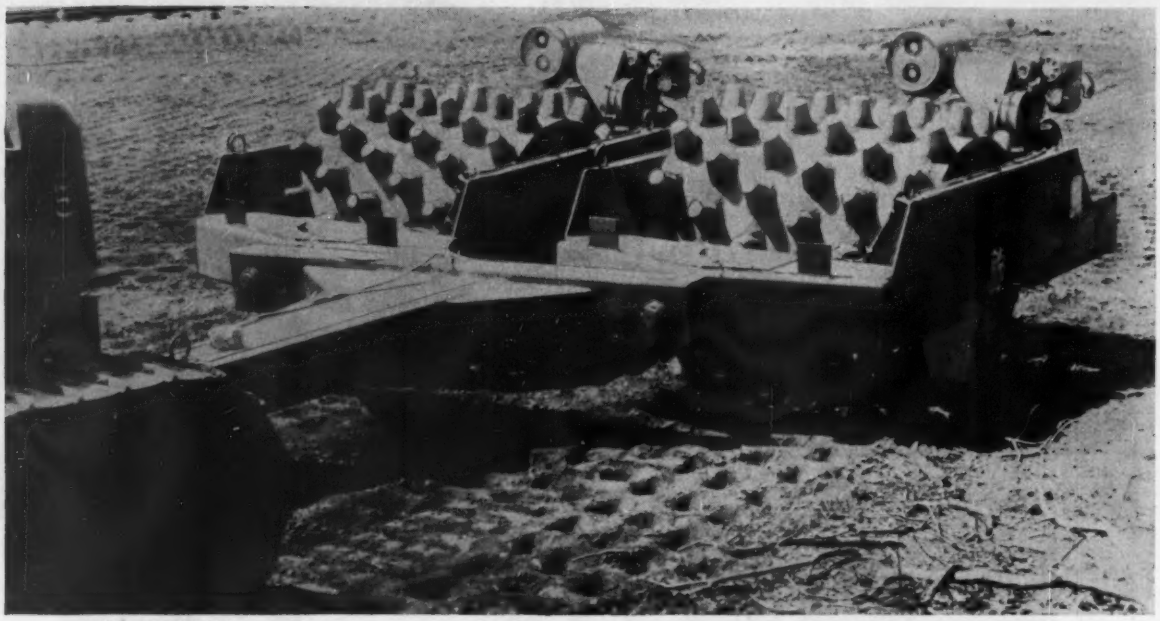
You asked for a BETTER SHEEPSFOOT for *Clay* Compaction



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RUGGED LUBE RIG—Converted 1½-ton telephone company truck carries lube and oil drums, an 85-cfm compressor, and a water tank on top.

PORTABLE WELDER — Rowe bought this 1-ton mail truck from the Army, uses it to carry an Airco 200-amp welder for field service.

ROWE CORP.—1.5 miles

Three men and four trucks form the nucleus of the maintenance operation for Rowe Contracting Corp., Malden, Mass. Rowe has one master mechanic, one mechanic's helper, and one lube man. They operate a mechanic's truck, a lube rig. a truck-mounted welding machine, and a fuel truck.

There's a good reason for this small crew. Rowe has a lot of new equipment on the job and expects a minimum of trouble. But they are working a particularly rocky section and the machines get plenty of wear.

To keep the equipment running smoothly, Paul Clemons, the master mechanic, adheres rigidly to a 120-hr service schedule. It works out something like this:

- Every Saturday morning he services six Euclid dump trucks.
- One morning a week he works on three Gardner-Denver Air Tracs and two Joy Challenger drills.
- On the other mornings he services the remaining equipment.

Clemons handles field repairs from a ¾-ton Chevrolet truck that carries acetylene equipment, two eight-compartment tool boxes, and two portable generators. In addition, he has available a 200-amp Airco welding machine mounted on an International 1-ton surplus Army mail truck. He is geared to handle everything in the field except major engine overhaul and transmission work. For these repairs, Rowe relies on distributors.

For its lube rig, Rowe has converted a 1955 Dodge 1½-ton telephone company truck with a covered top. It carries two 13-gal chassis and gear lube tanks with air-operated guns, two 55-gal drums of hydraulic oil, and two 5-gal drums for transmission and light-duty oil. An Ingersoll-Rand 85-cfm compressor supplies air. A 30-gal water tank sits on top of the truck. One lube man handles this rig, greasing all equipment once a day.

The telephone truck is convenient from another standpoint. It has built-in compartments on each side for supplies and tools.

QUICK PAINT JOB—After welding repairs, a workman applies paint to the radiator of a Euclid truck. Compressor on lube truck supplies air to the spray gun.

Inflating tires is a simple matter. When a rig needs air, it pulls up to the nearest of eight I-R 600-cfm compressors scattered about the job to operate the drills. The compressors are adapted to serve tires with a special attachment.

Equipment is fueled in the field by a truck that has four 265-gal compartments, two for diesel oil and two for gasoline.

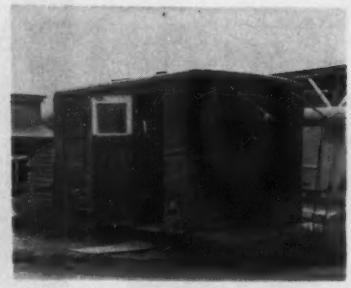
continued on next page

SEVEN APPROACHES . . .
continued

GOODRICH—0.5 miles

If you're a small contractor working close to home, then you might take a look at the compact combination service and lube rig that Ralph B. Goodrich of Burlington has on their job. This is a 1953 GMC 1-ton unit with an 8x12-ft enclosed walk-in van. The truck is neat, roomy, and easily operated by one man.

Equipment in the van has been arranged by the contractor to make tools and lubricants readily accessible. In the rear left corner there are five 16-gal hand-pumped tanks of gear lube, motor oil, hydraulic oil, brake fluid, and automatic transmission fluid. A large wood box for parts stands against the left wall beside the tanks. The parts box carries gaskets, welding and brazing rods, tubing, hoses, grease fittings, and an electrical testing kit. A two-way radio is in the front corner behind the driver's seat.



EFFICIENT COMBINATION—Army radio shack stores parts while enclosed 1-ton truck serves as mobile workshop and lube rig for one-man crew on Goodrich's job.

ROOMY RIG—Mechanic keeps tools in drawers of small workbench and in tool box at lower right. The 8x12-ft enclosed van has storage box, lubricants, and radio.

On the right side of the truck, there is an Airco acetylene setup in the rear corner and a metal tool box and a large steel tool bench. Mechanic John Anderson has all the tools he needs, including valve tools and an ignition kit, to handle engine and transmission repairs on the job. The truck also carries two spotlights powered by a 6-v truck battery.

In their yard, Goodrich has a Kellogg-American reciprocating compressor that weighs only 93 lb. When this is needed on the job, they simply back the truck up to it and load it on. They also have a 400-amp Hobart arc welder mounted on a trailer that can be towed by the service truck.

Operators of the heavy equipment on the job handle their own greasing, but Anderson conducts regular checkups before the morning run. And during the day he checks with the operators to make sure each machine is running properly. All equipment is on a regular service schedule, some by the hour, some by the week, some bi-weekly.

For parts storage, Goodrich has a surplus Army radio shack that is just about as compact as their mobile rig. This 6x12-ft building is just large enough for storage shelves, a workbench, and a grinder.

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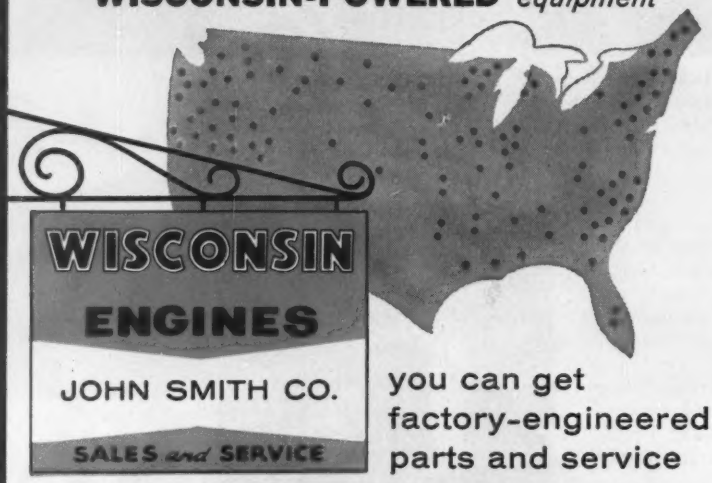
ATTENTION on-the-move users of
WISCONSIN-POWERED *equipment*



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All Authorized Service Stations carry the full line of WISCONSIN PARTS:

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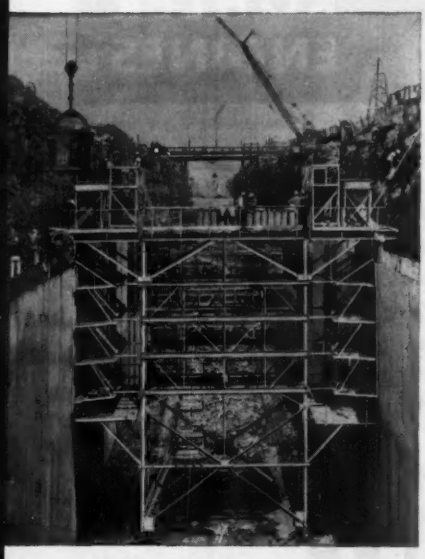
Blaw-Knox Steel Forms shape five miles of twin conduits at Niagara Power Development



Three contractors are building twin conduits 22,600 feet long, 46 feet wide and 66 feet high. All three use especially designed Blaw-Knox Steel Forms to place a total of 1½ million cubic yards of concrete.

The flexible conduit will permit arch loads to carry into rock through abutments. Steel rods anchor slab and wall concrete to guard against hydraulic pressure during conduit dewatering and possible rock movement.

Saves 35% assembly time. Forms are assembled faster and at reduced labor cost, according to Balf-Savin and Winkelman, one of the contractors on the $100 million conduit project. Another, Gull-DeFelice notes that only 15% of its men are needed to erect, move, set-up, and maintain Blaw-Knox Forms. And Merritt-Chapman & Scott "can always count on Blaw-Knox for quality equipment and dependable professional service."

More and more contractors turn to Blaw-Knox Steel Forms Consulting Service for skilled assistance in building dams, tunnels, bridges, and other projects. Backed by 40 years of forms building, Blaw-Knox has complete facilities to fabricate forms to your needs, and to deliver them on time. For details, write Blaw-Knox Equipment Division, Pittsburgh 38, Pa., or call STerling 1-2700.

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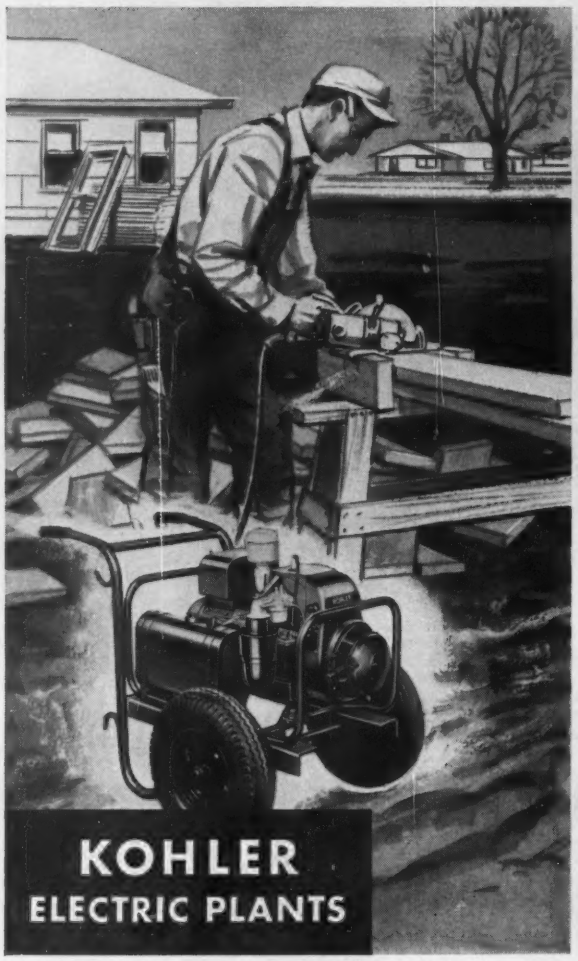

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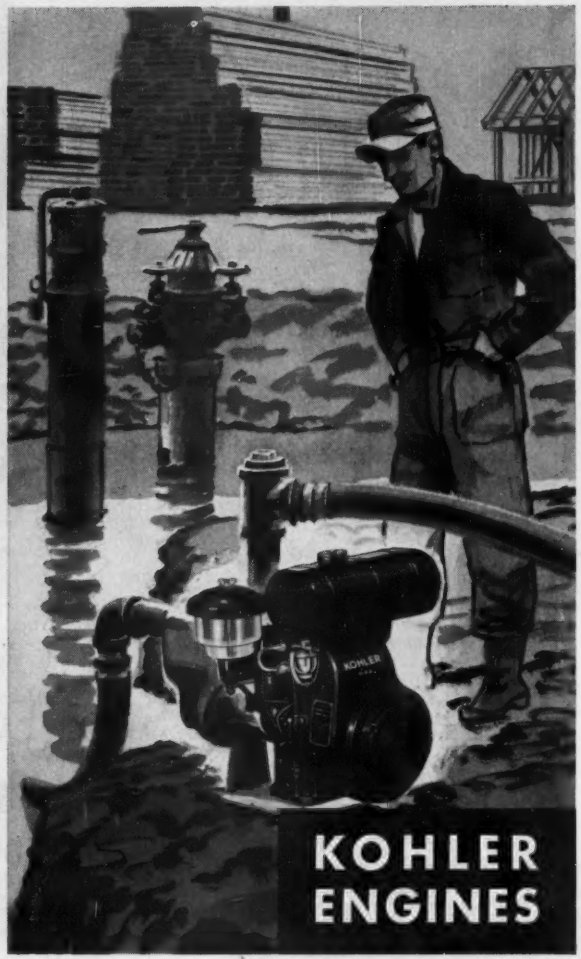

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With long experience in the production of internal combustion engines and electrical generating sets, Kohler Co. emphasizes ruggedness, conservative rating, ease of maintenance, ease of starting. Sales and service nation-wide. Write for illustrated printed matter.

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ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

MECHANIC'S TRUCK—An Albertson ¾-in. drill press rides on the tail gate of a ¾-ton GMC pickup. Tool compartments and a spare parts box occupy half of the body.

PORTABLE WELDER—When needed for field service, mechanic's truck will tow this trailer-mounted Airco 300-amp welding machine.

BURNETT & CAMPBELL—1.1 miles

A lot of little things add up to good maintenance practice for Burnett & Campbell, another Burlington contractor on the route.

They have three service rigs, all of them veterans of many construction campaigns. One of these, the lube rig, is an Army 1-ton four-wheel-drive command car with a two-man crew. Their sole responsibility is to see that all equipment is properly lubricated and gets regularly scheduled oil changes.

All lubricants are carried in the car. Burnett & Campbell buys Multifak 2, Texaco's 14-oz. cartridges of packaged grease. They remove the tops of the cardboard packages and snap the cartridges into manually-operated guns. Oils are in 5-gal cans. There are no compressors or other kinds of equipment in the car. Oil and grease maintenance varies with dust conditions in accordance with the schedule recommended by the manufacturer. The contractor says they adhere rigidly to that schedule.

The mechanic operates a ¾-ton GMC pickup. Half of the body is occupied by a tool compartment, a spare parts box, and an acetylene outfit. An Albertson ¾-in. heavy-duty drill press is mounted on the tail gate and lies flat on the truck body when the tail gate is up. Electricity for the drill is supplied by a 110-v Fornay Portarater generator. Two portable 300-amp Airco welding machines are available to be towed by the truck.

This setup enables the contractor to handle normal breakdowns and servicing. Major repairs require transporting the equipment to their home maintenance shop or to a local distributor. For hauling crippled rigs there is a Rogers 50-ton capacity lowboy and Brockway tractor on the job site. So far there has been no need to haul any equipment away.

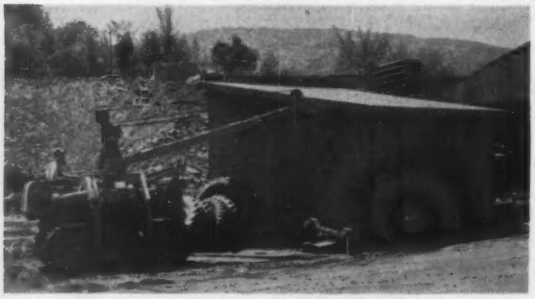
Yankee ingenuity is evident in the way Burnett & Campbell inflate the tires on their heavy equipment. No fuss or bother—they just pull rubber-tired equipment alongside the LeTourneau-Westinghouse scrapers and attach a special fitting to the air brakes reserve tank for a supply of air.

Texaco delivers gasoline and diesel oil to two 6,000-gal tanks. Rubber-tired equipment pulls up to the tank pumps to be filled. A 1,200-gal two-compartment fuel truck services the crawler equipment in the field.

Burnett & Campbell use Firestone tires on rolling equipment, and have a contract with a local dealer to service the tires on the job.

continued on next page

PREFAB SHOP—Lane's maintenance shop is a prefab corrugated metal building that stands on a concrete slab. The 60x80-ft shop has an overhead crane, machine tools.



YARD WORK—Trackson crane on International tractor works in Lane's yard, which also has a parts storage shack and a grease pit. There are seven mechanics on the job.

FUEL TRUCK—Lane fuels its equipment in the field from this three-compartment tank mounted on an Internationa lcarrier. Two of the compartments are for diesel, one for gas.

SEVEN APPROACHES TO MAINTENANCE

continued

LANE CORP.—7.5 miles (3 sections)

The most deeply entrenched contractor on the site right now is Lane Construction Co. of Meriden, Conn. They are working at three different sections, totaling about 7½-mi of highway.

The heart of their maintenance operation is a prefabricated 60x80-ft corrugated metal building that they erected on a concrete slab. Recently, they supplemented this building with another similar, but smaller prefab building about 4 mi away to serve mainly as a garage and storage facility.

The maintenance shop is equipped with an overhead crane mounted between two A frames, and some machine tools. But despite the shop's size and accommodations, Lane, like the other contractors, handles a considerable amount of repair work on the spot in the field.

Last fall, for instance, they repaired a 3½-yd shovel in the field. And late this spring they overhauled another shovel where it broke down. This kind of work may take a week to ten days in the open, but Lane sticks at it.

To service the wide range of equipment that Lane has brought onto this job, they have seven mechanics, including one master mechanic. Each mechanic drives a ¾-ton Chevrolet truck fully equipped with tools. Welding machines are mounted separately on Chevrolet 1-ton trucks.

Lane relies heavily on two-way radios. The master mechanic has one in the shop, another in his truck. Other radios are in the field office about 2 mi from the shop, and in each of the foremen's cars.

A storage shed and an outside grease pit are located in the yard. A Trackson swing crane on an International crawler tractor is available for work in the maintenance yard.

A mobile lube rig on the job mounts four drums, five hose reels and a compressor, and is manned by two lube men.

An International truck mounts a three-compartment fuel tank, two for diesel fuel and a third for gasoline. The truck takes its fuel from tanks in the yard.

MORRISON-KNUDSEN—4 miles (2 sections)

Adaptability is a prime requisite for an equipment superintendent. Take Bud Knoff who holds that job for Morrison-Knudsen on Interstate 89. Knoff is just up from Mexico where he spent six years as equipment super on another M-K job.

Now he's 5,000 mi north in the mountains of Vermont. Here he has cold weather to worry about. This means he wants some kind of a shelter. But, unlike his Mexico assignment, he can't put up something permanent. This is not going to be a six-year job.

continued on page 192

"Slickest operating crawler I've seen! ...and I've been around 'em all"

A. C. Ziegler of Allentown, Pennsylvania, is really sold on his new power-paced OC-96. He's realizing big profits on excavating, road-building and loading jobs with the greatest advancement in tractor design in years—the OC-96 loader from Oliver.

Contractors everywhere are getting production and earning more money than ever before with a tractor-loader that's giving them the fastest work cycles in its class. And they're benefiting from a new *ease of operation* that makes all other tractors old-fashioned.

NEW! *Three types of power turns:* spot turns, gradual turns, and counter-rotation turns for about-faces in tractor's own length—fastest turns you've ever known.

NEW! Instant shifting from forward to reverse, *on the go*, with Oliver's all-hydraulic Trans-O-Matic transmission. Four speeds in high or low range—forward to 6.05 m.p.h., backward to 8.07 m.p.h.

NEW! Heavy-duty industrial torque converter (*not* automotive) automatically boosts power to match the demands of the work. Fast, non-stall operation is assured every time. Advanced 62 gross h.p. diesel.

NOW! Double your loading production with this fast 1-yd. loader. The OC-96 is factory-built *as a loader*—not a tractor with side pedestals added. Rugged frame, 9200-lb. breakout force, complete visibility and faster speeds—all combine to give you two loads in the old time of one.

OLIVER OC-96
TRANSOMATIC

Take the controls..."let the tractor do the talking"...and find out what the talk's about! See your Oliver dealer today!

LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS

THE OLIVER CORPORATION
Dept. 2232, 400 W. Madison St., Chicago 6, Ill.

NEW CATALOG—"must" reading for cost- and comfort-conscious tractor users.

NEXT JOB—Receiving M-K equipment as it arrives from all over U.S. keeps Knoff busy. Here he adjusts outriggers on P&H crane that will erect a Northwest No. 6 shovel.

BIG PUSH—As truck crane lifts the shovel front, Knoff and helper swing it around into position. Knoff was on I-89 job about a week when machines started rolling in.

MORNING CHECKUP—Start of busy day begins for M-K equipment super Bud Knoff (in the driver's seat) as he checks out a Cat D8 that is clearing maintenance yard site.

Knoff puzzled the problem for a while. At first he thought he might erect a prefab Butler building. But by the end of the first week he had a better idea. The best bet, he decided, would be to bring in a couple of 8x34-ft single-axle van-type highway trailers and set them up parallel to each other along opposite sides of a 40x40-ft concrete slab. He plans to lay timber beams across the top of the trailers, then tie the beams together to support an aluminum or maybe a plywood roof. The sides of the shelter will be enclosed with wood sheeting or a polyethylene film.

Each trailer will serve as a parts and material storage warehouse. The space between the two trailers becomes a shop. Access betweeen the trailers and the shop will be through sliding doors on the sides of the trailers. Knoff expects to have the makeshift structure up later this summer.

This setup fits M-K's situation on Interstate 89. They have two 2-mi contracts now, about 4 mi apart. If they want to, they can easily shift this setup from one section to the other or relocate the trailers if they take on more work farther down the line.

Knoff doesn't plan to have any machine tools other than the drill press mounted on one of the service trucks. All machine work will be farmed out to local distributors or machine shops.

But he does plan to adhere to a rigid preventive maintenance schedule. Two maintenance crews, each on a 10-hr shift, will service the equipment. M-K has a yard in Portsmouth, N. H. that is supplying a mechanic's truck, a grease truck, a fuel storage truck, and truck-mounted welding machines.

Equipment will be serviced on an operating-hour basis with variations depending upon the type of machine and dust conditions. They will handle virtually every type of repair on the job except those that require machine-shop work.

In the maintenance yard, Knoff plans to have a 20-ton P & H crane to handle overhead work. There will be three underground fuel storage tanks in the yard, two for diesel oil and one for gas.

But that's in the future. Right now Knoff has his hands full putting together a crew and receiving and assembling equipment as it arrives from all over the United States. M-K's job equipment inventory will include three shovels, seven tractors, seven dump trucks, two graders, a fleet of scrapers, and drilling rigs. That's enough to keep any man hopping.

Put your finger on a

NEW, PROFITABLE READY MIXED CONCRETE MARKET

. . . Sell concrete for highway construction with a BUTLER HP-85 Portable Ready Mixed Concrete Plant

READY MIXED OPERATORS . . . Take advantage of the swing to ready mixed for highways. It's a new source — an additional source — for substantial profits.

And the highway contractor will welcome you as a prime contributor to greater earnings in his pocket. Here's why:

With his purchase of ready mixed concrete from you, he eliminates a $50,000 dual drum paver.

And he eliminates a high-priced, 5 man paver crew

— as well as a batching plant and batch trucks.

With concrete from your completely automated BUTLER HP-85 *Portable* Plant, the contractor gets a uniform, inspector-pleasing, non-segregated mix, pin-pointed to any specfication —

and he speeds up his job with less supervisory headaches and overhead.

Production up to 200 cubic yards an hour

A Butler HP-85 *Portable* Ready Mixed Plant, completely automated, equipped wtih two turbine-type mixers, easily charges your transit mix trucks at the rate up to 200 yards an hour. That's enough to keep ahead of any highway demand — without a single bead of sweat.

And Butler simplified, in-place, quick-connected automation is interlocked against human error. You have faster batching for every material, water included, with a perfection in accuracy that makes friends of tight specifications, the inspector and your contractor-customer.

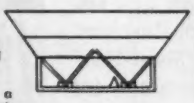
CONCRETE PLANT CPMB MANUFACTURERS BUREAU

NATIONAL READY MIXED CONCRETE ASSOCIATION NRMCA

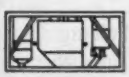
WITH BUTLER PROFIT-PORTABILITY YOU SELL HIGHWAY CONCRETE 100 . . . 200 . . . 500 MILES FROM YOUR OFFICE

Here's a picture story of transport and erection — the ultimate in portability.

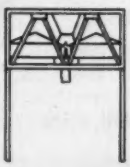
- The compartmented bin section ships complete with lugs attached for crane lift.



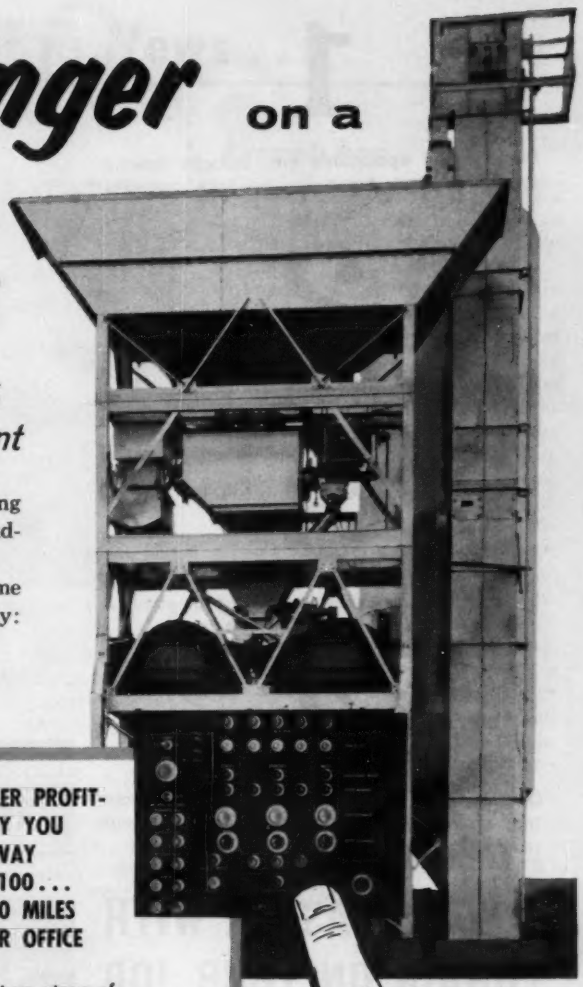
- Batcher section is a complete unit with all piping, wiring, batchers and automatic controls in-place, ready for plug-in.



- Mixer section is also a complete unit with two turbine mixers, gates and controls pre-installed. Circuitry is completed with plug-in quick connectors. Support columns ship separately. These are quickly pinned to the mixer platform and swing into place as the mixer section is raised.



On a highway job, a move to the next section is made as quickly as with a batching plant — in fact faster than most.



For healthy business and profit growth in this new market, send for the new, detailed BUTLER HP-85 Bulletin. Just jot your request on a postcard. You'll get a prompt reply.

BUTLER BIN COMPANY

949 Blackstone Avenue • Waukesha, Wisconsin

1

Blend many operations into smooth flowing cycles with fast, two-lever "Joy-Stick" air-ease controls.

2

Work non-stop with "Shear-Ball" turntable connection. Requires no adjustment, less maintenance than other designs.

3

Set four "Power-Set"® outriggers in about a minute. Move up and reset even faster.

4

Operate faster with a square-tubular-chord boom that provides greater lifting capacities, longer reaches.

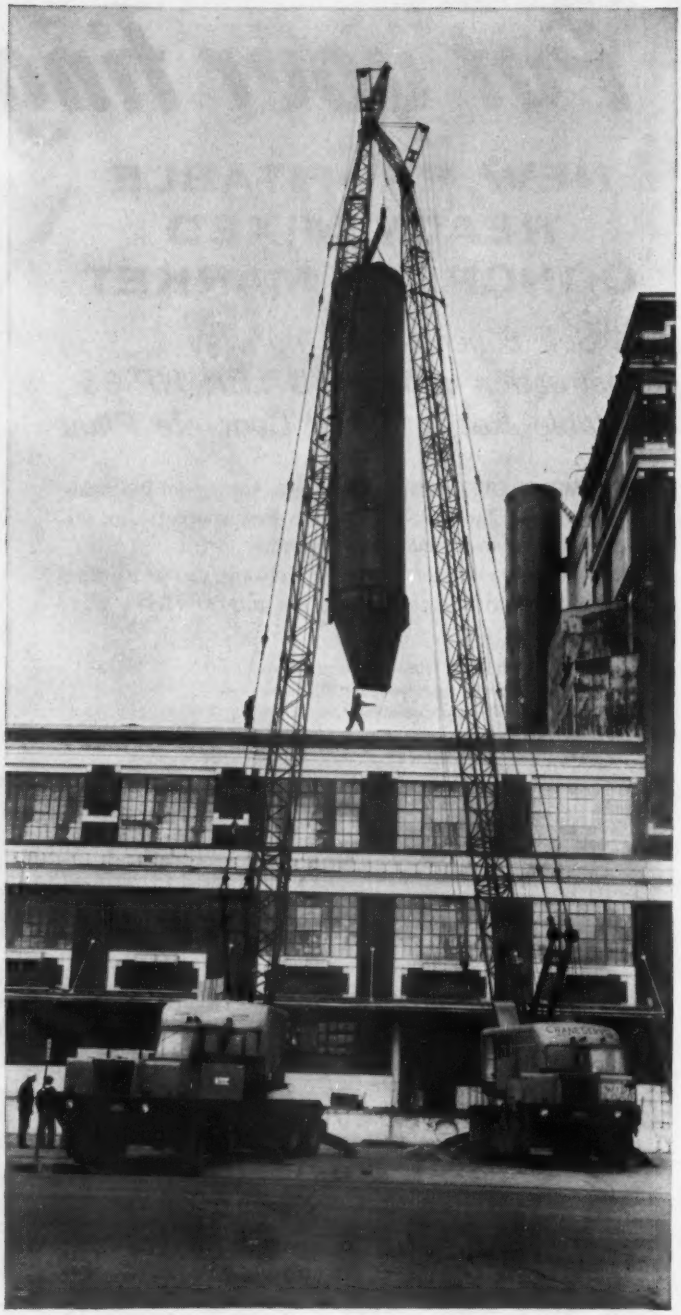
4 WAYS FASTER WITH LORAIN ON YOUR JOB

Lorains are real output boosters. They're designed to speed your operations . . . and ruggedly built to stay with your toughest jobs. Their reliability is field-proven. "Shear-Ball" connection for instance is warranted for 10 years.

Lorains convert so easily that field changes are a breeze. Beyond that, Lorains have the *operating* flexibility to pay off whether you use them as hard-digging shovels, hoes . . . fast-moving draglines, clamshells or cranes.

See your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO



Moto-Cranes lift 15,000-lb. flour storage bins at a 68-ft. radius. Crane Service, Inc. teams two MC-530W's to lift six 57-ft. bins to the roof of General Mills, Sperry-Division plant in Spokane. The 35-ton Moto-Cranes are equipped with 120-ft. booms and 20-ft. jibs. Both are working on "Power-Set"® outriggers.

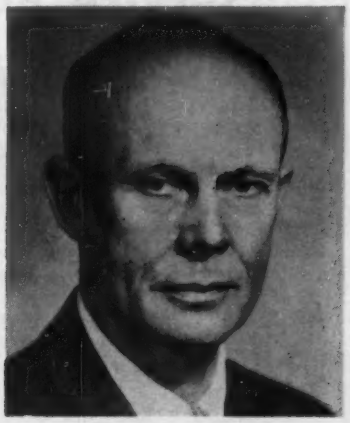
LORAIN® ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS:** Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . **OUTLETS:** Lorain products sold and serviced by 249 distributor outlets throughout the world.

Construction Men in the News . . .

Raymond

GEORGE F. FERRIS



HENRY C. BOSCHEN

GEORGE F. FERRIS and HENRY C. BOSCHEN have been elected to the top executive positions of Raymond International Inc. Ferris succeeds Maxwell M. Upson as chairman of the board of directors and Boschen becomes president.

Ferris was first elected to the Raymond board in 1946 when he joined the company as vice president and general manager. He became president in 1953.

Boschen has been associated with Raymond since the start of his business career in 1928. He was elected a vice president and director in 1946. Prior to his present appointment, he was vice president in charge of Raymond's general contracting activities in the United States and overseas.

Raymond has also elected ARTHUR FERTELL to a vice presidency. Fertell has served continuously as a supervisor of heavy construction since he joined the company in 1922. He directed construction of the Hyperion Outfall in the Pacific Ocean, plus numerous bridge, tunnel, and harbor projects in the U. S., Cuba, Venezuela, Colombia, and Peru. He is a civil engineering graduate of Cornell.

Pomeroy

EARL T. VAN GEEM is now director of engineering for J. H. Pomeroy & Co. Inc., of San Francisco. Pomeroy has also named FRED H. BAASTAD as manager of the engineering division and WILLIAM J. TALBOT, JR., as chief engineer.

Van Geem joined Pomeroy as a field engineer in 1950. In 1959 he became assistant vice president of foreign operations, a position he continues to hold in addition to his new responsibilities. He is a graduate of the University of Southern California with a degree in civil engineering.

Baastad headed his own construction firm from 1947 to 1953, headquartered in Caracas, Venezuela. Subsequently he served in engineering posts on large joint venture projects in which Pomeroy participated. He is a civil engineering graduate of Norwegian Institute of Technology.

Talbot joined Ben C. Gerwick, Inc., now a division of Pomeroy, in 1939. He served as field, project, and chief engineer for Gerwick, specialists in pre-stressed concrete construction. He holds a civil engineering degree from the University of California.

American Bridge

MORRIS E. HAGLER is now a member of the San Francisco district staff of the American Bridge Div. of United States Steel as contracting manager. He held the same position in the Chicago district since 1956.

Burns & Roe

MELBOURNE A. FORREST is a newly elected vice president of Burns & Roe, Inc., New York City engineers and constructors.

Forrest joined the company in 1947. He was assistant to the firm's executive vice president from 1950 to 1955, director of the executive engineering division from 1956 to 1959, and last year was named director of the power and industrial facilities division. He will continue to be responsible for the company's operations in power, nuclear, and industrial facilities, and defense and aeronautical projects.

Prior to joining Burns & Roe, Forrest was with Consolidated Edison Co. of New York City. During World War II, he was a commander in the U.S. Navy Reserve in charge of power plant design, construction, and operation at the New York Naval Shipyard, Brooklyn.

National Constructors

H. E. LORE, manager of the engineering and construction department of Dravo Corp, Pittsburgh, is the new vice president of National Constructors Assn. Lore succeeds R. L. Cashen, former vice president of H. K. Ferguson Co. of Cleveland, who died recently.

Announcement of Lore's election was made by NCA president D. W. Darnell, board chairman of the Fluor Corp. Ltd. of Los Angeles.

NCA is a group of internationally-known firms specializing in the design and erection of industrial facilities.

Crow

WILLIAM J. PICKETT, project engineer and estimator for William L. Crow Construction Co., is the newly elected secretary of the firm. He joined the Crow organization in 1955, and earlier this year was named director of engineering. In addition to handling his new responsibilities, Pickett will continue to work in the field as a project engineer.

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DIFFERENT TYPES OF EASILY-ERECTED CONCRETE FORMS

Tell us your forming problem... We'll tell you how to handle it.

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Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distribution, sales personnel and other activities.

DISTRIBUTOR APPOINTMENTS

Quick-Way Truck Shovel Co.: The following distributors have been appointed: Casey-Metcalf Machinery Co. of Los Angeles, Calif.; Smith Booth Usher Co. of San Diego, Calif.; Matt A. Doetsch Machinery Co. of Washington, D. C.; and the Van Sun Co. of Taipei, Taiwan (Formosa).

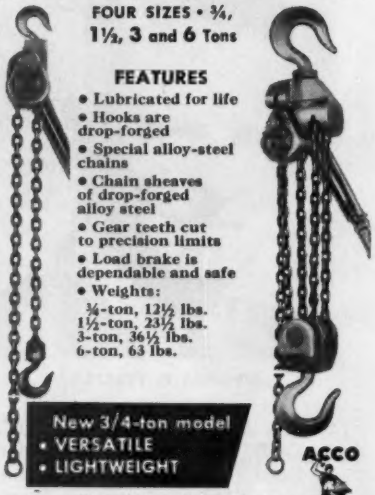
Lister-Blackstone, Inc.: The following distributors and dealers have been appointed to handle Lister-Blackstone diesel engines: Shelley Tractor & Equipment Co. of Miami, Fla.; Lister Sales and Service of Great Bend, Kan.; Andrews & Andrews Equipment Co. of Portland, Ore.; Atlanta Equipment Co. of Atlanta, Ga.; Michigan Generator Service of Detroit, Mich.; Engines, Inc. of Chicago, Ill.; Nelson Equipment Co. of Tucson, Ariz.

Dart Mfg. Co.: The following six dealers have been appointed to sell and service the Dart line of concrete vibrators: St. John's Equipment Co. of Jacksonville, Fla.; Tri State Tractor Co. of Atlanta, Ga.; M & M Equipment Co. of Louisville, Ky.; Safway Scaffolds, Inc. of Bradenton, Fla.; Alexander Equipment Co. of Orlando, Fla.; and C. T. Fike Equipment Co. of St. Louis, Mo.

Maxon Construction Co.: S. M. Christhilf & Son Company, Inc., of Timonium, Md., has been named distributor of Maxon Dumpcrete equipment in Delaware, District of Columbia, and Maryland.

Simplex Forms System, Inc.: The following distributors and dealers have been appointed: Spanall of the Southeast of Alexandria, Va., and Durham, N. C.; Holzworth-Werner Co. of Buffalo, N. Y., and Ft. Lauderdale, Fla.; Geo. C. Holcombe Co. of Niagara Falls, N. Y., Coastal Equipment Co. of Ft.

NEW 3/4-ton Pull-A-Way
Added to WRIGHT TYPE "C" LINE!



FOUR SIZES • ¾, 1½, 3 and 6 Tons

FEATURES
• Lubricated for life
• Hooks are drop-forged
• Special alloy-steel chains
• Chain sheaves of drop-forged alloy steel
• Gear teeth cut to precision limits
• Load brake is dependable and safe
• Weights:
¾-ton, 12½ lbs.
1½-ton, 23½ lbs.
3-ton, 36½ lbs.
6-ton, 63 lbs.

New 3/4-ton model
• VERSATILE
• LIGHTWEIGHT

ACCO

Write to York, Pa., office for complete information

Wright Hoist Division
AMERICAN CHAIN & CABLE
York, Pa., Bridgeport, Conn.

LESCHEN WIRE PORTER ROPE DIVISION
H. K. PORTER COMPANY, INC.

When They Compare for

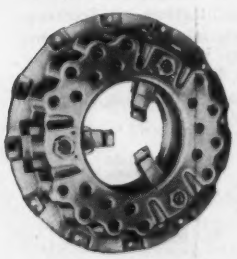
Clutch Torque Retention

...Fleet Operators Switch to LIPE!

Torque retention is an important matter to the steadily growing body of fleet owners who are changing over to LIPE. In their every-day experience Lipe Heavy-Duty DPB Clutches mean *more* miles per gallon of fuel... *more* ton-miles between shop-stops... *more* capital-equipment-use per repair dollar. All because of Lipe's high retention of clutch torque capacity.

Is it any wonder then that after looking at fleet maintenance and operating costs, more and more owners are discarding other clutches for the one that pays off in profits per ton mile.

Among fleet owners all over the country ...*the trend is to* LIPE!



Lipe Heavy-Duty DPB Clutches are available in single and two-plate types; 12", 13", 14" and 15" sizes; with torque capacities from 300 to 1900 ft.-lbs.

Lipe-ROLLWAY CORPORATION SYRACUSE 1, N.Y.

J-M Friction Material Technical Bulletin #109:

How to select the right friction material for the right spot to cut maintenance costs

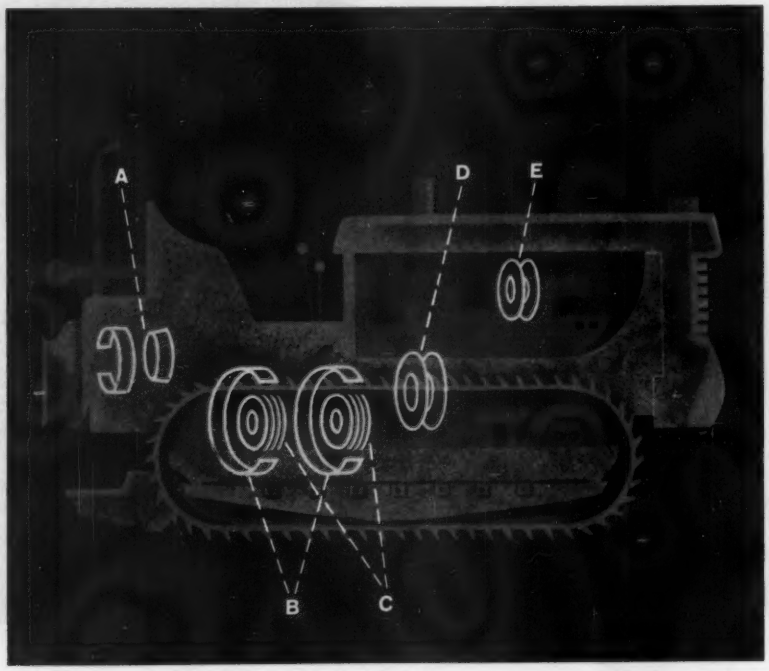
Over 50% of all premature failures in relined brakes and clutches are caused by the improper selection of friction material for the machine's requirements.

Working closely with machine operators, J-M Friction Engineers have developed a wealth of knowledge and data, which can help you extend the period between overhauls and at the same time step up the power and efficiency of your equipment.

Here is a diagrammatic sketch of latest recommendations on the selection of friction materials for a typical crawler tractor . . . this information is based on the wide, practical experience of countless operators.

●Johns-Manville Friction Materials, factory equipment on many machines, offer the most complete range of styles in the field. They can fulfill the friction material needs of any piece of equipment in any service. J-M Moulded Asbestos Frictions, particularly well-suited where heavy shock loads tend to crush or shear materials, give long life in hardest use. For those who prefer woven frictions, J-M Woven Asbestos Roll stock, in a variety of styles, seats quickly, will not score, and has great mechanical strength.

Woven J-M Cone Facing being applied to a power take-off unit.



Easy guide to proper friction selection:

A. Power Take-Off receives sudden shock loads, intermittent loading.

—Cone clutch—Style 510 for easy seating. Style 304 for those operating in oil.

—Brake Lining—Style 240 for good wear and friction stability.

B. Steering Brakes subject to erratic engagement and extreme wear.

—Style 240 for light-duty tractors . . . Style 140 for heavy-duty tractors for high quality and excellent wear characteristics.

C. Steering Clutch Discs exposed to high energy loading with shock, slippage and heat.

—Style 140 straight clutch facing . . . Style 141 Gear Tooth Facing, for their resistance to shock, heat dissipation, low-fade characteristics and Style 141's high tooth impact strength.

D. Master or Engine Clutch exposed to constant high energy loading.

—Style 751 for light-duty tractors for good wear and engagement characteristics and Style 140 for heavy-duty tractors.

E. Starting Engine Clutch needs positive, non-slip, non-grabbing friction.

—Style 751 because of excellent cushioning action and engagement characteristics.

The assistance of a friction materials specialist to help you select your requirements is available through your Johns-Manville Distributor. Your own copy of the J-M Industrial Friction Materials book, listing all friction materials' types, styles and recommendations can be had by writing Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ontario. Ask for FM-35A.

JOHNS-MANVILLE

JOHNS-MANVILLE JM PRODUCTS

SALES AND SERVICE . . .
continued

Lauderdale, Fla.; Simplex-Rochester Forms Sales Co. of Fairport, N. Y.; Waco Scaffolding of Florida, Inc., of Lakeland, Fla.; Waco Scaffolding of Orlando, of Orlando, Fla.; Waco Scaffolding of Brevard, of Eau Gallie, Fla.; Waco Scaffolding of Miami; H & K Sales Co. of Mason City, Ia.; and Anderson Distributing Co. of Saginaw, Mich.

Highway Equipment Co.: The following three distributors have been appointed: Dalworth Machinery Co. of Dallas, Tex.; General Equipment Co. of Reno, Nev.; Hennessey-Forrestal Machinery Co. of St. Louis, Mo.

ON THE SALES FRONT

Arcair Co.: Herbert L. Martin has been appointed field representative in the Central United States.

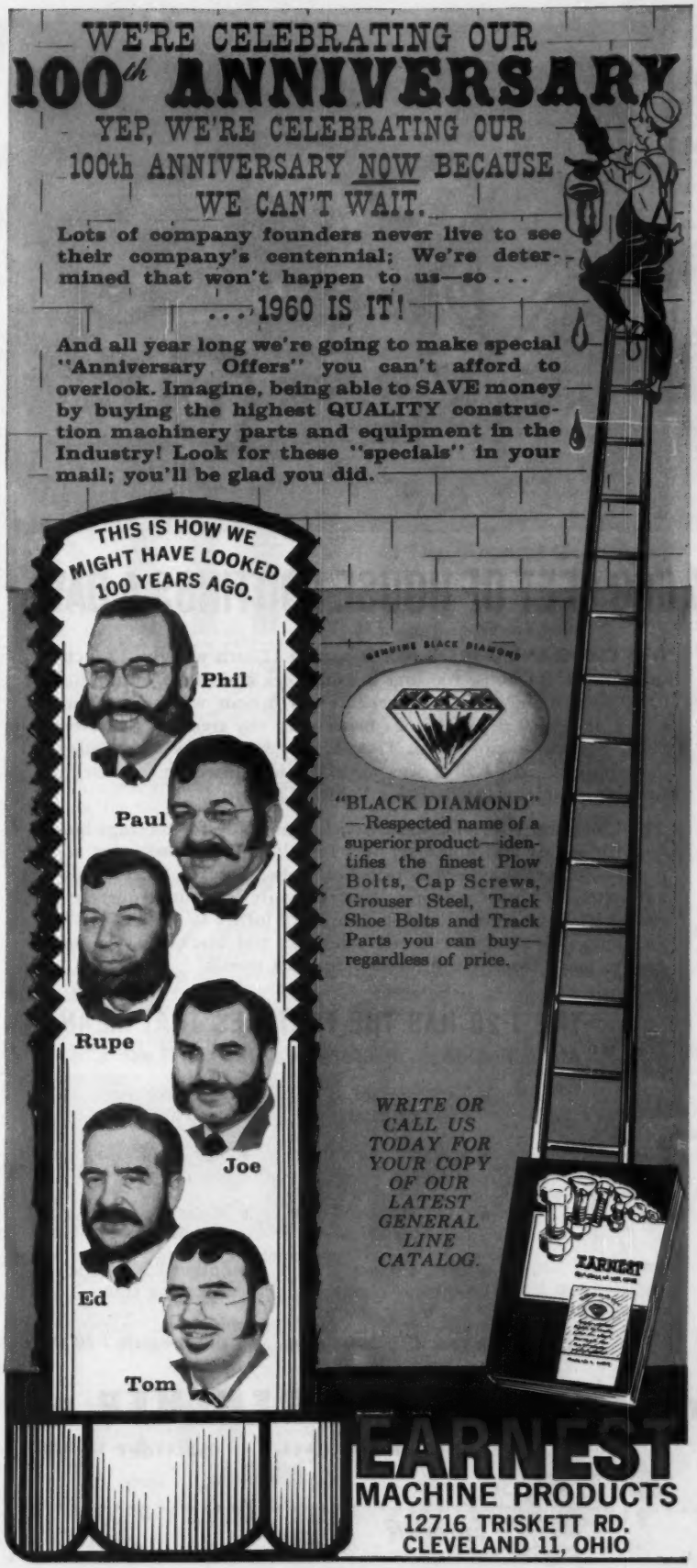
Olin Mathieson Chemical Corp.: The Ramset Fastening System, part of the Winchester-Western Division, has announced the following appointments: Charles D. Maclure, district sales manager in Denver, Colo.; Eugene T. Umpleby, district sales manager for West Virginia, eastern Kentucky, southeastern Indiana, and parts of Ohio; Miles I. Bauman, district sales manager for Indiana, Illinois, and western Kentucky; and Victor Christian, Jr., sales representative in Georgia.

Economy Forms Corp.: The first Canadian branch of the company is now operating in Oshawa, Ont., under the name Economy Forms of Canada, Ltd.

Bucyrus-Erie Co.: Robert J. Urlakis has been appointed sales engineer for Winkie drills. He will be responsible for all phases of the sales program, both domestic and export.

Master Builders Co.: Frank J. Kelly has been named field representative for the Tampa, Fla., branch office.

Westinghouse Air Brake Co.: The Le Roi Division has announced the following sales appointments: W. E. Mattson, central region sales manager; Edwin F. Atkinson, special representative in Richmond, Va.; Gary R. Radcliffe,


WE'RE CELEBRATING OUR
100th ANNIVERSARY
YEP, WE'RE CELEBRATING OUR 100th ANNIVERSARY NOW BECAUSE WE CAN'T WAIT.
Lots of company founders never live to see their company's centennial; We're determined that won't happen to us—so . . .
. . . 1960 IS IT!
And all year long we're going to make special "Anniversary Offers" you can't afford to overlook. Imagine, being able to SAVE money by buying the highest QUALITY construction machinery parts and equipment in the Industry! Look for these "specials" in your mail; you'll be glad you did.
THIS IS HOW WE MIGHT HAVE LOOKED 100 YEARS AGO.
Phil
Paul
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"BLACK DIAMOND" —Respected name of a superior product—identifies the finest Plow Bolts, Cap Screws, Grouser Steel, Track Shoe Bolts and Track Parts you can buy—regardless of price.
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MACHINE PRODUCTS
12716 TRISKETT RD.
CLEVELAND 11, OHIO

6,000 FEET OF HOUSE FOOTINGS A DAY!

THIS CLEVELAND J TRENCHER is cutting 12-inch wide by 12-inch deep trench for house footings in sand, rock and adobe, averaging 6,000 feet of smooth, clean trench every 8-hour work day. "The Cleveland J-20 digs footings faster than any trencher I've ever used," says contractor Frank Arcerio, president of the Montebello Trenching Co. His J-20 is digging 60,000 feet of trench for a large housing development in Palos Verdes, California.

The Cleveland J-20 is an ideal trencher not only for footings but also for mains and house services for all utilities lines—for all types of city and suburban trenching jobs. Only 60 inches wide and extremely maneuverable, it works easily in tightest quarters, sneaks by obstructions, digs as close as 18 inches to parallel walls and fences. It's easy on lawns, sidewalks and blacktop, too and easy to move from job to job at safe truck speeds.

THE J-20 HAS THE FEATURES THAT MEAN

More Trench... in More Places... at Less Cost

- 100% control at operator location
- hydraulically shifted conveyor
- pulley-enclosed dual conveyor drive
- world's finest trencher crawlers
- 1,000-hour track lubrication
- digs 12-24" wide to 5½' deep
- 33 positive digging speeds
- optional hydraulic crumbing shoe

Check with your distributor now... get the complete J-20 story

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Good Everywhere

SALES AND SERVICE . . .

continued

special representative in San Francisco; Barry S. Bain, district representative in New England; and Thomas E. Stone, mountain region sales manager.

Beaver-Advance Corp.: Leo B. Manning has been appointed western district manager with headquarters in San Carlos, Calif.

Ralph B. Carter Co.: G. L. Babcock has been appointed sales manager of the Pump Division.

George E. Failing Co.: V. C. Mickle has joined the sales staff of the company.

IN THE MAIN OFFICE

Chrysler Corp.: W. C. McDonald has been named chief engineer of the Marine and Industrial Engine Division. He succeeds H. D. Peacock, who resigned.

Griffin Corporations: David H. Griffin has been elected president of the Griffin Corporations, comprising Griffin Equipment Corp. and Griffin Wellpoint Corp., both of New York City. He succeeds the late Hugh J. Hush.

Clyde Iron Works, Inc.: Harry T. Bratt has been appointed chief engineer of the company.

ASSOCIATIONS

American Welding Society: R. D. Thomas, Jr., president of the Arcos Corp., has been elected president of the society. A. F. Chouinard of the National Cylinder Gas Co., J. H. Blankenbuehler of Hobart Brothers Co., and C. E. Jackson of the Linde Co. have been elected vice presidents. The following directors also have been elected: James M. Shilstone, David P. O'Connor, George W. Kirkley, Lester L. Baugh, Robert D. Stout, John Mikulak, Roy McCauley, Ernest F. Nippes.

SPECIAL MENTION

Challenge Manufacturing Co.: Challenge Manufacturing Co., makers of industrial machinery, has merged with Cook Bros. Equipment Co., producer of heavy construction and hauling equipment. The new corporate group will be known as Challenge-Cook Brothers, with general offices in Los Angeles.

ALPHA

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

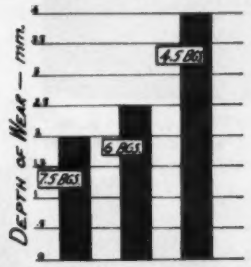
news and notes from the field

7 Factors Affecting Life of Concrete Floors

Long-wearing concrete floors are easy to build if a few practical steps are observed in designing, placing and curing them. Naturally, the most important part of the floor is its wearing surface. The hardness or "wearability" of the surface is of special importance for such jobs as industrial floors, warehouses, loading platforms, etc.

Through years of on-the-job study and extensive research work, Alpha has found that the following 7 factors must be considered if floors are expected to endure heavy wear. *Please note that these factors are not short cuts and also you can't omit the importance of quality materials, good supervision and good workmanship.*

1. The Cement Factor



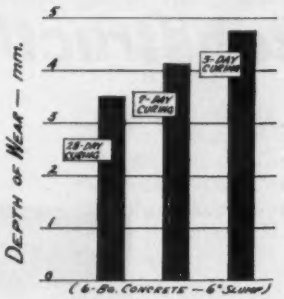
EFFECT OF CEMENT FACTOR ON DEPTH OF WEAR
(2″ slump and 28-day curing)

A 7.5-bag mix will wear 20% better than a 6-bag mix and 100% better than a 4.5-bag mix at the same slump and with the same 28 days moist curing.

2. Slump of Concrete

By *reducing* the slump from 6″ to 2″, the wearability of floors made of 4.5-bag concrete will be increased by 15%.

3. Length of Moist Curing Time



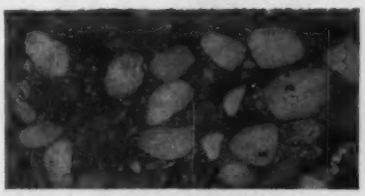
EFFECT OF MOIST CURING TIME ON DEPTH OF WEAR
(6-bag concrete, 6″ slump)

The higher the slump the more the concrete is affected by improper curing. The chart above shows how moist curing improves the wearability of 6″ slump concrete.

4. Compressive Strength

For all practical purposes, the wearability of concrete is directly proportional to its strength. Example: 6000 psi concrete wears over four times better than 1800 psi concrete.

5. Finishing Concrete



Overtroweling will cause the finest particles and water to rise to the top, thus resulting in a low strength surface skin.

The importance of troweling at the right time can be seen in the fact that the surface skin of 0″ to 4″ slump concrete can show the *same* amount of wear. Water and fines brought to the surface through careless troweling of lower slump concrete reduces the surface strength until it is no better than higher (up to 4″) slump concrete. The surface hardness of 4″ slump concrete is 100% better than 10″ slump concrete.

6. The Type of Cement

In cases where concrete is subjected to wear at an early age, provision must be made for high-early concrete strength. This can be done by using hi-early cement or a higher cement factor where Type I cement is used. Such conditions vary too much for specific recommendations here, but Alpha's field engineers are always available to users of Alpha products to assist in determining the proper construction method for special conditions.

7. Drying After Curing

If concrete is permitted to dry *after proper curing*, its surface skin strength is almost doubled. It is advisable, therefore, to allow at least one day of drying after moist curing before the floor is subjected to heavy wear.

Good sound aggregates are important, but it is the mortar binding the aggregates together that determines, for the most part, the wearability of the floor. There is no short cut to quality concrete and as has been proved time and again, the right way is the most economical in the long run.

Note: *All data on this page are approximate and intended for general guidance and not specific rules in concrete floor design and construction.*

Reprints of the helpful information presented on this page are available on request.

ALPHA
PORTLAND CEMENT COMPANY
Alpha Building, Easton, Pa.

Dragline gets inspection from Keith Hutchison, Greer vice president and technical director, Phil Owen and Chuck Daub (l. to r.). Owen and Daub are Standard Oil lubrication specialists who render the school technical assistance on lubrication problems. Both have engineering degrees and both have completed Standard's Sales Engineering School. Daub has ten, Owen five years of field experience serving commercial customers.

Standard Oil helps this school teach men how to keep a construction job going

Hutchison, Owen and instructor John Rolando watch student load 17-yard off-highway dirt hauler, one of school's 26 units.

Greer Excavating and Mechanics School has learned one of the lessons it teaches—how to keep equipment in service

Situation: Time is money at Greer Excavating and Mechanics School, Braidwood, Illinois. The school promises its students hours of experience operating equipment. It teaches them how to maintain and service the machinery they work with. It also teaches the men how important it is to do the job right and on time.

Up to 70 students, guided by nine experienced instructors, work 26 pieces of equipment almost every daylight hour, seven days a week, winter and summer. Bulldozers, scrapers, trucks, shovels and draglines *must stay in service* in spite of the rugged treatment they get.

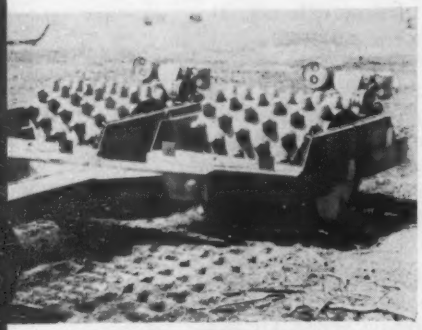
What was done: From the first day of school more than three years ago, Greer Institute's equipment has been serviced exclusively with Standard Oil gasoline, diesel fuel, motor oil and greases. No unit has ever been down due to lubrication failure or because of slow delivery. How come? Because Phil Owen, an experienced Standard Oil lubrication specialist from Joliet, just 20 miles from the school, makes regular calls to check out any lubrication problem. From Wilmington, only 5 miles away, Standard Oil agent R. J. Kavanagh makes deliveries of gasoline, diesel fuel, lube oil and grease as often as every other day. The school never needs to telephone for service.

What you can do: To get this kind of service call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

You expect more from **STANDARD** *and you get it!*

Plenty of dirt to work with. School site is on 1,700 acre tract that has been ripped, torn and piled as result of strip mining. Greer instructor, John Rolando teaches student how to use skid shovel.

Construction Equipment News . . .



Vibration Boosts Sheepsfoot Efficiency

The Terrapac CF-30 aerator-compactor is a vibratory sheepsfoot roller that develops ground pressures of 5,000 to 6,000 psi. Each 58-in.-wide roll weighs 9,500 lb and has a diameter of 64 in. to the tips of the tamping feet. The width of one unit composed of a single roll and frame is 6 ft 3 in. No ballast is necessary for the rolls.

Each roll is powered by a 25-hp Deutz engine. Vibration frequency is variable from 1,400 to 1,600 vpm. At maximum frequency the roller delivers a 10-ton impact. In recent tests in Ohio the unit compacted 18-in. lifts of glacial fill to a standard Proctor density of 90 in only three passes at 2 to 3 mph.—**Vibro-Plus Products, Inc., Stanhope, N. J.**

Tractor Shovel Is Easy to Operate

All controls for the Caterpillar 966 Traxcavator are grouped within easy reach of the operator. The forward-reverse lever is mounted on the steering column and can be flipped with one finger. Selectors for high and low speed ranges and for two and four-wheel drive are at the operator's left. The unit's two-speed power-shift transmission gives it four speeds in both forward and reverse. Power comes from a 6-cyl, turbocharged diesel engine delivering 140 net hp.

There are three sets of brakes. The left pedal shifts the transmission into neutral and brakes the machine. The right pedal slows the rig without affecting the transmission. The parking brake automatically shifts the forward-reverse lever into neutral and locks the transmission output shaft. Bucket capacity of the 966 is 2¾ yd; the breakout force is 24,000 lb. The rig can turn around at a radius of 20 ft 9 in.; ground clearance is 17½ in.—**Caterpillar Tractor Co., Peoria, Ill.**

Quick Dismantling Makes Crane Easy to Transport

Removal of one large bolt at the end of each axle is all it takes to disconnect the side frames from the American 900 Series crane-excavator for transportation. The traction chains are mounted outside the crawler side frames permitting them to be removed without breaking the chains. Other features of the 900 include a ground clearance of 18 in., track shoes in either 38 or 44-in. widths, and a choice of diesel engines.

Rigged as a crane, the air-controlled unit is rated at 110 tons. Boom lengths range up to 270 ft plus jib. Various excavating attachments are available with capacities from 3½ to 4½ cu yd. The rig also can be equipped with a backhoe with either 55 or 65-in.-wide buckets and an optional positive pressure attachment.—**American Hoist & Derrick Co., 63 S. Robert St., St. Paul, Minn.**

Variable-Speed Trowel

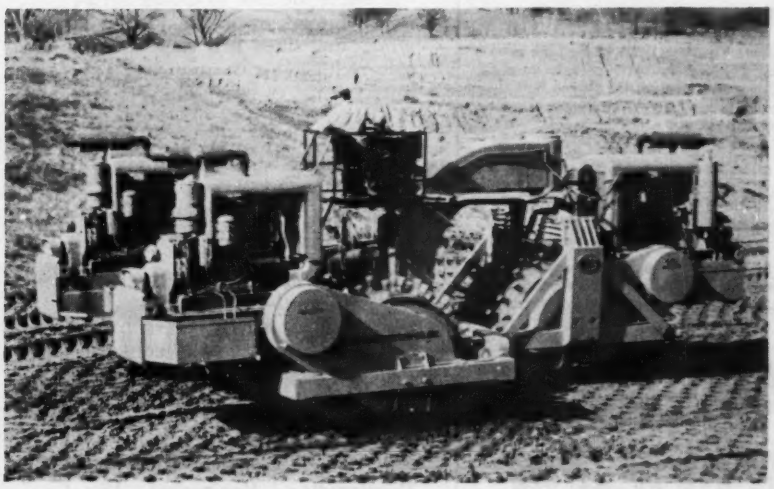
Troweling speeds can be varied from 26 to 100 rpm on the Stow G 46-B Roto-Trowel. A 6.8-hp engine powers the unit. A knob on the handle controls blade pitch and can be adjusted while the machine is running. Another feature is a dead-man control and a clutch that is engaged by tightening the belt; this eliminates the problem of belt stretching, according to the manufacturer.

Two sets of four blades each—one for floating and one for finishing—are standard equipment. A set of combination blades is optional.—**Stow Mfg. Co., 31 Shear St., Binghamton, N. Y.**

Drill's Boom Covers Wide Working Range

Drilling over either track at right angles or sinking horizontal snake holes only 25 in. from the ground are no problem to this crawler drill. It can work in a 17-ft-dia circle over an arc of 180 deg and can drill horizontal breast holes at a height of 11 ft. The carriage swings 85 deg allowing vertical holes to be drilled regardless of slope conditions. Dual controls permit one man to operate the G-900 Tracdril from either the forward end of the drill boom or from the rig's tramming position. All drilling operations are hydraulically controlled.

A 12-hp tramming team consisting of two 6-hp air motors moves the drill from hole to hole at the job site. The tramming team is powerful enough to tow a 600-cfm compressor up a 20% grade. Throw-out clutches disengage the tramming motors to eliminate burn-outs when the rig is towed.—**Chicago Pneumatic Tool Co., 6 E 44th St., New York 17, N. Y.**



Three-Drum Self-Propelled Tamping Roller

A separate engine drives each rolling drum of the self-propelled Bros tamping roller. The new rig weighs 81,000 lb when empty; weight per foot of drum is 4,700 lb. All drums oscillate to insure uniform compaction pressures over the rolling width of 15 ft 9 in.

Overall length is 29½ ft, width is 17 ft 10 in., and height is 11½ ft. Three 130-hp diesel engines drive the SP-3DT roller. Operating speeds vary from 1.5 mph to 7 mph in both forward and reverse. Torque converters with a three-speed, full-reversing power-shift transmission are standard equipment.—**Bros Inc., Road Machinery Div., 1057 Tenth Ave., S. E., Minneapolis 14, Minn.**

Summer...

now is the time to properly light your construction hazards

USE THE DIETZ 3 WAY HAZARD WARNING SYSTEM

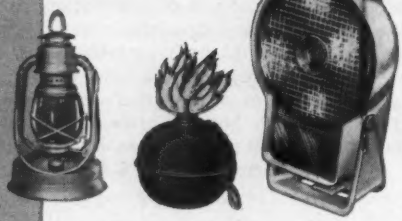
It's Summer... more highway projects... more traffic, too!

Whatever the season, wherever the road . . . it's always the right time to adequately light your highway hazards. Protect the public and you protect yourself.

NEW! DIETZ HAZARD WARNING PLANNER

A Practical On-the-Job Tool! Quickly and easily shows how, when, and where to use each type of warning light for maximum safety under all weather conditions and all types of roads and speeds.

Send $1. for each Planner — personalized with your name



LANTERNS TORCHES VISI-FLASH

Use Dietz Visi-Flash Lights to alert the oncoming driver. Brightest, safest, most trouble-free flashers on the market. Warn: "Danger Ahead" for up to 1500 hours without changing batteries.

Use Dietz Lanterns to locate hazard in relation to driver's position. Show exact location, shape, extent, and boundaries of hazard area. Burn up to 100 hours.

Use Dietz Torches to guide driver around the hazard. Fully illuminate the danger in every weather. Burn up to 48 hours on low cost kerosene.

Go DIETZ and you go Safely

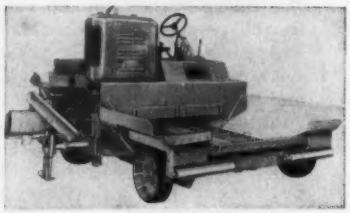
R. E. DIETZ COMPANY
Dept. 67 225 Wilkinson St., Syracuse 1, N.Y.

EQUIPMENT NEWS... *continued*

Two Sets of Controls Simplify Operation

Loads on either side of the truck are always in sight of the operator because a separate set of controls is mounted on each side for easier operation. The Teale 200 hydraulic crane can lift 3,750 lb at an 8-ft reach. At 16 ft the lifting capacity is 2,500 lb. With a special telescoping boom, this crane can handle a 1,300-lb load at 28 ft.

The unit takes up only 17 in. of space behind the truck cab. The crane boom works in a full 360-deg circle, and hydraulically extensible outriggers provide stability when working over the sides of the truck.—**Teale & Co., P. O. Box 308, Omaha, Neb.**



Folding Hoppers Improve Performance

Hydraulically powered hopper wings boost the efficiency of two bituminous paver finishers. The sides of the hoppers are hinged at the conveyor line so that all material moves onto the conveyor when the sides are raised. This also reduces hand labor and permits the paver operator to adjust the width of the machine for work around obstructions. Finger-tip air-operated controls actuate the hopper wings. All controls are located in a central console and can be reached easily from the operator's seat.

Power steering is another new feature on the Blaw-Knox Express and Suburban pavers. Automotive-type steering wheels control the front wheels on both models. The capacity of the rigs remains unchanged: 10 tons for the Express model and 4 tons for the Suburban.—**Blaw Knox Co., Construction Equipment Div., Mattoon, Ill.**

PLANETARY AXLES

and how Clark's broad line can save you time and money

Chances are, you well know the advantages of planetary axles. Far less strain on axle shafts and other power train components—hence far fewer breakdowns. Also, because torque is lightened and smaller gears and shafts used, you reduce GVW, add payload.

But do you know, specifically, the major advantages *Clark's planetary axles* can give you?

For one thing, of all firms building axles, no one has the experience background of Clark. Clark has produced more planetaries since 1954 than all other companies combined! The result is twofold:

(1) better performance, and (2) the broadest *standard* model line in production today . . . over 50 models, ranging in single-axle carrying capacity from 6,500 to 120,000 lbs.

Moreover, most Clark single planetary axles are available in both steering-drive and non-steering versions, as well as combined into bogies (with capacities up to 180,000 lbs).

The savings of this broad line are obvious. Less design time. Lower cost. Faster delivery. And unmatched proof of performance.

For full facts, fill out and mail the coupon.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY, Axle Division, Buchanan 6, Michigan

Am interested in planetary axles to carry loads ranging from_____to _____lbs, to

☐ replace present axles
☐ fit new designs

Type of application_____

Name_____

Company_____

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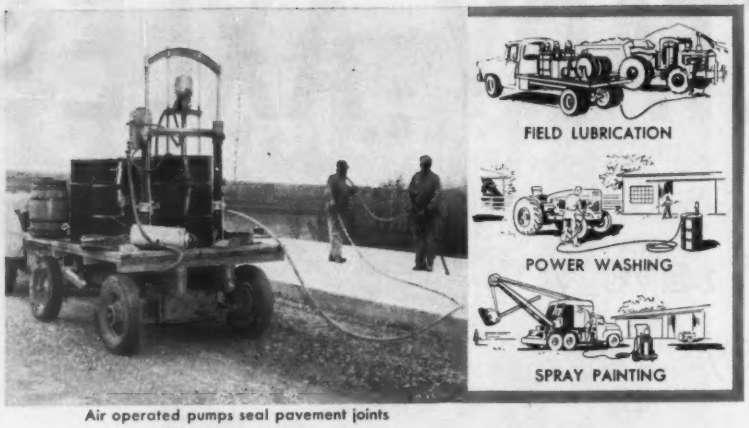

Air operated pumps seal pavement joints

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See for yourself . . . less expensive —lower installation cost—pump from original drums—infinite control of speed—seal material from dirt—completely empty drum . . . With these features Graco equipment gives you more work for less money even on the toughest jobs. From the lightest to heaviest of materials there's a pump for every purpose . . . mastics, plastics, paint, chemicals. For complete information on pumping equipment that meets your needs . . . send us your requirements.

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MAYO
TUNNEL AND MINE EQUIPMENT
LANCASTER, PENNA.

Combination Spreader-Distributor

Asphalt and chips go down practically at the same time with the Cartwright Sealcoater. Keeping the time interval between asphalt and chips to a minimum insures good bonding and reduces excess chips.

In operation, a dump truck tows the Sealcoater and discharges chips into the unit's hopper. The pump output can be varied to suit the resurfacing requirements. A signal warns the driver if he is driving too fast or too slow for the pump output, but the chips are deposited at a rate that is proportional to the forward speed.—**Berry Corp., Stone Rd., Lexington, Ky.**

Big Power Trowel

Operating speeds of the Master 36-in. power trowel are adjustable from 45 to 110 rpm. Its engine is a 5-hp, four-cycle Briggs & Stratton unit that has enough power to operate the trowel without stalling even when supplementary weights are added.

The Master "5-Horse" weighs 120 lb and handles 8-in. combination float-finish blades or 6-in. finish blades with 10-in. slip-on float shoes. A knob on the handle controls blade adjustment.—**Master Vibrator Co., 170 Stanley Ave., Dayton 1, Ohio**

Box Beams for Tennessee Highway Have Sinews of Bethlehem Strand

This photograph, taken at Dixie Concrete Pipe Company, Inc., Nashville, Tenn., shows the manufacture of box beams for the Interstate Highway Project, currently under way in Putnam County, Tenn.

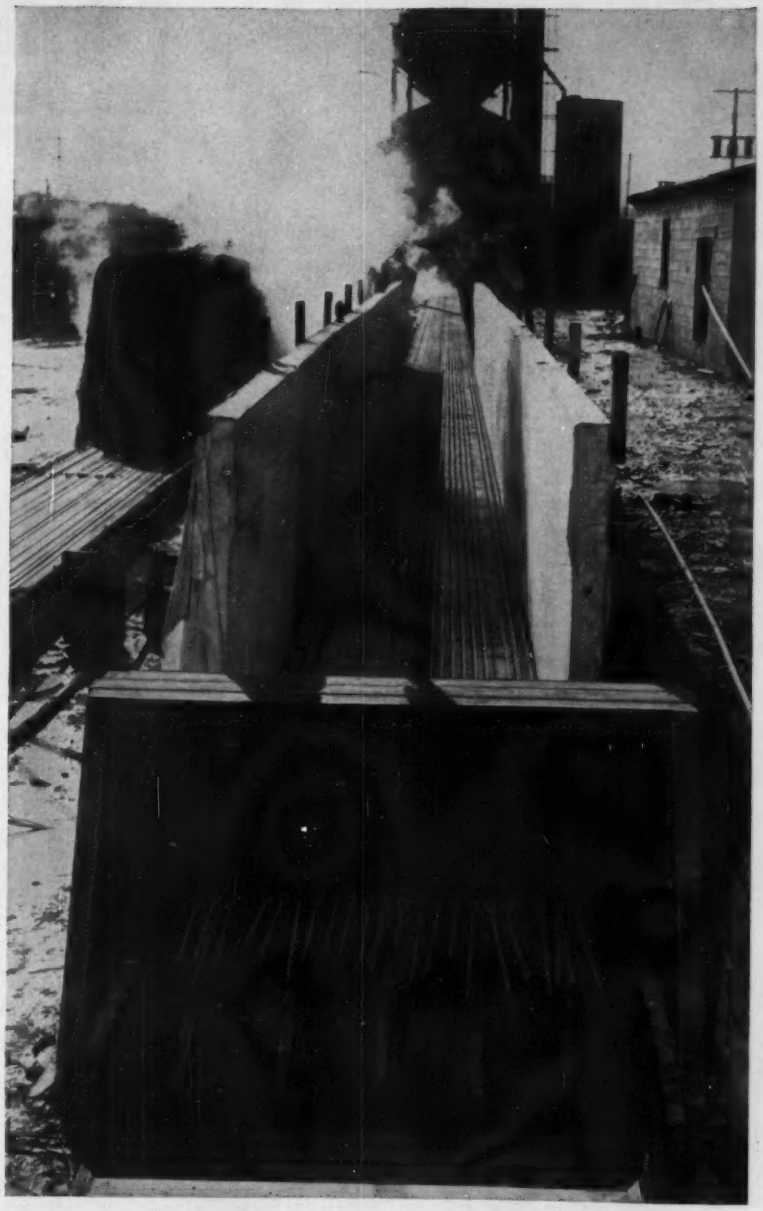
The 41 3/8-in. diameter stress-relieved strand pattern, used in each member, is initially stressed with a force of 287 tons. The beams, 78½ ft long, 42 in. deep, and 36 in. wide, are designed to support an H20-S16-44 highway loading.

Bethlehem Stress-Relieved Strand, manufactured to ASTM Specification A416-57T, has consistent, uniform mechanical properties within each reel length, as well as from carload to carload. This consistency is the direct result of Bethlehem's close control over induction heat-treatment and other phases of manufacture.

We'll be pleased to give you the full story on stress-relieved strand. Simply call the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

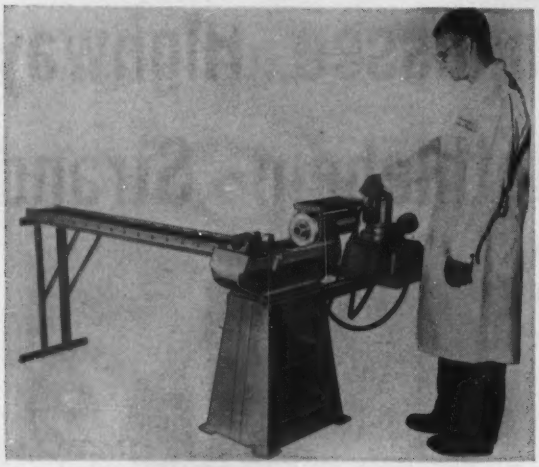
Export Distributor:
Bethlehem Steel Export Corporation



BETHLEHEM STRESS-RELIEVED STRAND

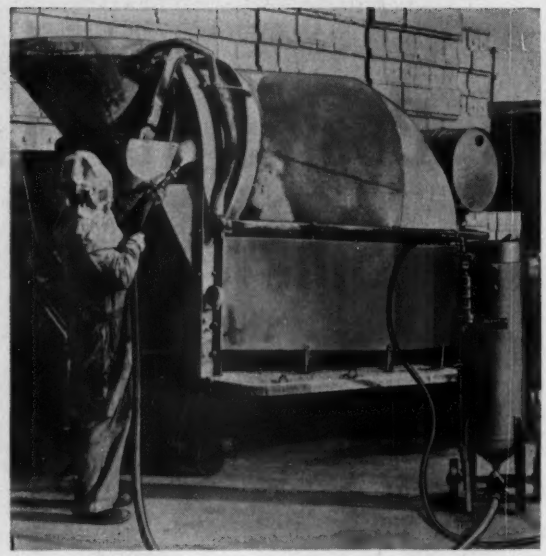
BETHLEHEM STEEL

BETHLEHEM STEEL



Small Track-Pin Press

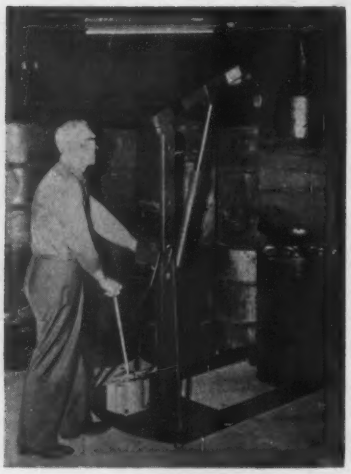
The Owatonna Y360-A press incorporates a 35-ton, single-cylinder, double-acting ram, and a two-stage hydraulic pump, and it removes or replaces pins and bushings faster than previous models of Owatonna track-pin presses. Roller conveyors, available in 5-ft sections, can be bolted together to any length to facilitate handling of track. Without the conveyors the press is 32 in. high and requires a 40x16-in. floor space.—**Owatonna Tool Co., 380 Cedar St., Owatonna, Minn.**



Sand Blaster Is Handy Cleaning Rig

This air-operated, portable sand blaster is handy for removing dry concrete from mixers, trucks, spreaders, finishers, and forms. The unit is available in sizes ranging from 300 to 2,000 lb.

Control valves adjust the flow for any type of abrasive, and a stopper valve starts or stops the blast without exhausting the air supply. Optional equipment includes a water and sand mixing chamber to reduce dust, and remote controls.—**Ruemelin Mfg. Co., 3862-J N. Palmer St., Milwaukee 12, Wis.**



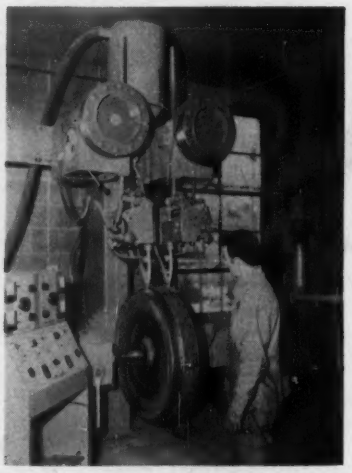
Hydraulic Shop Crane

Maximum boom height of the Hydro-3 crane is 105 in.; maximum reach is 62 in. The lifting capacity at this position is 700 lb, but in a fully retracted position the crane can lift as much as 1,500 lb.

The small, versatile lifting rig is equipped with a three-position telescoping mast and boom and rides on 6-in. wheels in front and 4-in. caster wheels in the back.—**Thern Machine Co., 3760 W. Fourth St., Winona, Minn.**

Arc Welding Electrodes

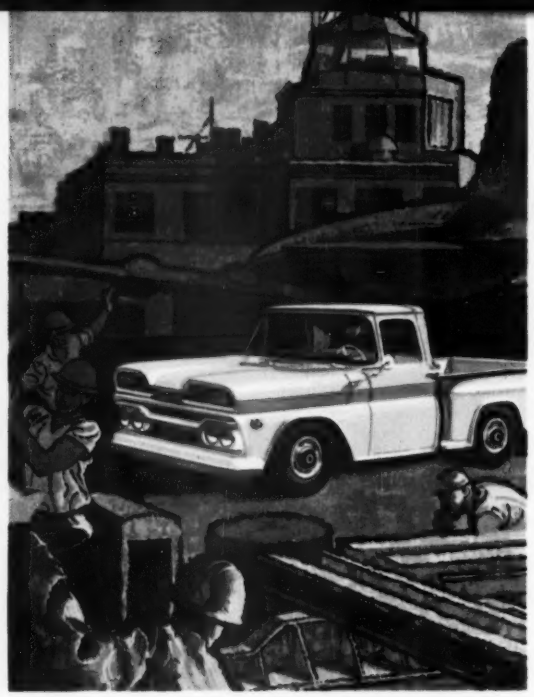
Tufanhard 375 hardsurfacing electrodes are designed for good wear resistance in applications subject to medium impact conditions. The extruded, heavily coated arc welding electrodes leave a weld deposit that has a stable coating, is non-machinable, but can be forged at a bright cherry red heat. Approximate hardness of the hardsurfacing deposits is Brinnell 375 or Rockwell "C" 40. —**Hobart Bros. Co., Troy, Ohio.**



Rig Rebuilds Rollers

A welding unit built by the Automatic Welding Co. resurfaces rollers, idlers, and wheels up to a dia of 40 in. The Micro-Matic model 7520-Y is equipped with a yoke that permits the mounting of all types of rollers and tilts for flange resurfacing. Components include a variable speed carriage, motorized welding head lift, control console, and either single or dual welding heads.—**Automatic Welding Co., Waukesha, Wis.**

Now, you can drastically cut your trucking costs thanks to GMC's BIG BREAKTHROUGH in engine, chassis and cab engineering. We urge you to compare GMC's genuine truck value . . . feature for feature . . . dollar for dollar. Check with your nearby GMC Dealer listed in the Yellow Pages for actual proof.



New, distinguished GMC Conventionals are smashing sales records everywhere. And no wonder, look at the extra value and uncompromising ruggedness you get in new GMC pickups. Bigger, stronger cabs. Easier-handling, smoother-riding trucks. Road-tried, test-proved, exclusive V-6 power for lasting, low-cost performance. From 34 combinations, you can get the pickup you actually want and need.

Superio
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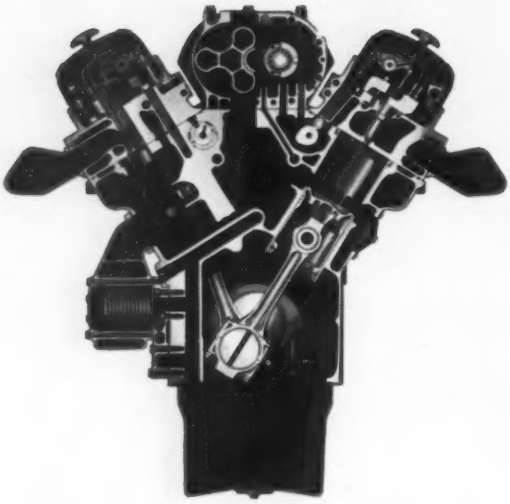
uperior performance, big pay-ads and low-budget operation re the reasons new GMC inety-Inchers are fast be-oming contractors' favorites. ower is the exclusive, ex-nded-life V-6 or Twin-Six as engine, or today's modern iesels—6V-71 Series. A dem-nstration on your toughest b will be convincing proof.

Join the contractors that are profiting from the many advanced features of the new GMC steel tilt-cabs. BBC is only 72 inches and axle set-back 52 inches – the preferred dimensions to haul more weight, more volume . . . more profitable payloads. You also get superior performance, extremely short turning and big safety vision. Choice of V-6, Twin-Six gas power or V-6 diesels in models from 19,500 lbs. GVW to 76,800 lbs. GCW.

MEN WHO KNOW TRUCK COSTS ARE BUYING GMCs FOR GREATER TON-MILE PROFITS!

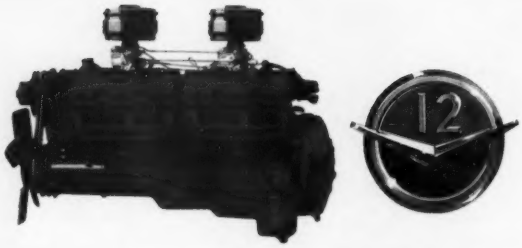


MORE RESPONSIVE, SMOOTHER POWER! NEW GMC V-6 DIESELS

Contractors "working by the clock" praise the instant throttle response and steadier flow of power from GMC's 2-cycle design. You get power on *every* downstroke. There are no wasted strokes or power lags. This work-proved 71 Series gives you more power per cubic inch displacement, more power per pound and more power per dollar!

CHOOSE FROM THESE EFFICIENT, FUEL-SAVING DIESELS		
Model	Max. Torque	Max. Horsepower
6V-71	577 @ 1200	189 @ 1800 210 @ 2100*

*No extra cost



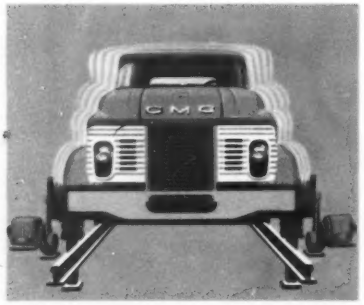
MOST PULLING POWER YOU CAN GET! TWIN-SIX

Exclusive GMC Twin-Six engines are giving truck owners the greatest load-moving power of any standard gas engine. This is lasting power, too. Maximum governed engine speed is only 2400 rpm. Low-stress, easy-stroking speed greatly extends engine life and reduces operating costs.

NEW TWIN-SIX FOR PROFIT-PERFORMANCE ON ALL HEAVY HAULS		
Model	Gross Torque Range	Max. Horsepower
702	625-630 @ 1400-2100	275 @ 2400

Full, rigid crankshaft support! Notice the full 3-inch extended GMC skirt for rigid crankshaft support. New compact design, extra-strong inner ribbing and staggered cylinders all increase strength and rigidity, decrease costly wear and failures.

FEATURE FOR FEATURE, DOLLAR FOR DOLLAR, NI



Built really rugged for extra life! Tests prove—double-wall cab construction, new rubber-bushed 3-point mountings, new extra-heavy reinforcements throughout give new GMC cabs amazing long life, make them ride safer, more comfortably.

Shorter turns and easier steering! New, wider track reduces turning circle as much as 15 feet and increases road stability. Improved recirculating ball steering gears cut steering effort.

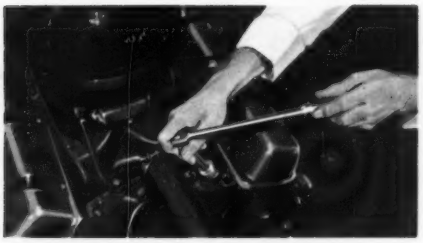
More safe stops! Bigger lining areas, new Centrifuse brake drums extend brake life, make driving safer with surer stops.

NEW EXTENDED-LIFE V-6 ENGINES, AVAILABLE ONLY IN GMC TRUCKS!

Tough, accurate tests show new GMC V-6 engines—with proper maintenance and application—have a life potential of up to 200,000 miles without a major overhaul.

High output at low rpm gives you the torque to get loads moving and the horsepower to maintain top legal road speeds.

THERE'S A GMC V-6 ENGINE FOR EVERY JOB		
Model	Gross Torque Range	Max. Horsepower
305A	258-260 @ 1400-2200	150 @ 3600
305B	264-266 @ 1100-2000	150 @ 3600
305C	268-270 @ 1200-2100	165 @ 3800
351	308-312 @ 1400-2400	180 @ 3400
401	375-377 @ 1200-2000	205 @ 3200



New, easy servicing! Comparisons of factory-authorized flat-rate charges indicate that routine maintenance, even major overhauls on the V-6, take less time than on comparable-size competitive engines.

Positive acting, longer lasting valves! Both intake and exhaust valves in the new V-6s are extra large and durable. You get big valve heads; large, short, stiff stems; positive rotators; integral valve guides . . . everything for the best sealing, less wear, freer breathing and cooler operation.

Five brackets solidly hold rocker shaft in exact location. Aluminum material expands to maintain correct valve-lash clearance at all operating temperatures.

Short, rigid push rods are practically deflection-free.

High-mounted camshaft has positive lubrication even at cold starts, to protect lobes and lifters from galling.

NEW GMCs ARE YOUR BEST TRUCK VALUE!

Softer ride . . . simpler handling! New GMCs with independent front suspension reduce wheel shimmy and tramp. Ball joints cut friction for easier steering. New maintenance-free torsion bars have variable rate to absorb shocks and jolts.

Stronger chassis! New design frames are up to 35% stronger . . . extra-tough to take the most severe construction hauling.

Longer spring life! New, standard 3-inch-wide variable rate springs only support weight. Radius rod leaf transmits all torque and braking forces.

GMC
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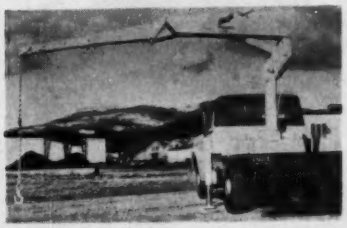
TRUCKS

From ½-ton to 60-ton . . .
General Motors leads the way!

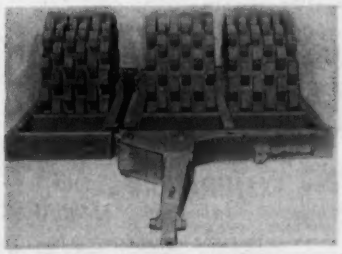
GMC Truck & Coach—a General Motors Division—Pontiac, Michigan.



Truck Engine Powers Hydraulic Crane

Any truck rated at 1 ton or more can mount the Power Arm L-20 hydraulic crane. Power is supplied by the truck engine, but an outside power source can be used if the crane is in a stationary location or on other types of mobile equipment. A chain and hook for lifting from below ground level are standard equipment.

Lifting capacity is 5,500 lb, and maximum reach is 13 ft to the side or 20 ft above ground. The standard boom swings 180 deg, and it may be equipped to swing a full circle. Hydraulic stabilizing jacks and dual controls for either side of the unit are standard equipment.—**Skagit Steel & Iron Works, Sedro-Woolley, Wash.**



Extra Drum Attachment Increases Rolling Width

Standard Hyster model D tamping rollers consist of two 32-in.-wide wheels mounted inside a frame. The rolling width is 6 ft. A third wheel, mounted in a separate frame, now can be attached to the standard two-drum unit to increase the rolling width to 10 ft.

The attachment is hinged to the side of the basic unit insuring flexibility on uneven ground. The roller tongue is relocated on a special bracket placing it at the center of the three-wheel combination rig. The roller can be converted back to its original width by removing the hinge pins and bolting the tongue in its original position. — **Hyster Co., P. O. Box 328, Peoria, Ill.**

Versatile PAYLOADER® expands your working range and capacity

A "PAYLOADER" tractor-shovel is the most usable machine a contractor can own. It combines rubber-tired traction and mobility with the workability of a complete assortment of attachments to provide versatility you've never experienced before. For example:

THE PATENTED DROTT 4-IN-ONE bucket (above) gives you 4-machine utility for one moderate cost. This hydraulically controlled split bucket combines shovel, clamshell, scraper and dozer action in a single tool. It saves time and labor by doing the work of several specialized machines with one operator and one machine.

EVERY 4-WHEEL DRIVE "PAYLOADER" gives more machine for your money. It travels to the job fast, under its own power... walks and works over sidewalks and curbs without damage... handles many scattered jobs in a single day. Mechanically, every "PAYLOADER" incorporates many proven Hough features for fast, easy operation that gets jobs done ahead of schedule. Judge for yourself how all the advantages of "PAYLOADER" versatility can be applied to your operations. A nearby Hough Distributor can supply complete details, or return the coupon.

OTHER USEFUL ATTACHMENTS include lift fork (shown), back hoe, black-top spreader, crane hook, side boom and backfill blade for even more "PAYLOADER" usefulness.

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☐ Send data on all rubber-tired "PAYLOADER" models 4-B-7

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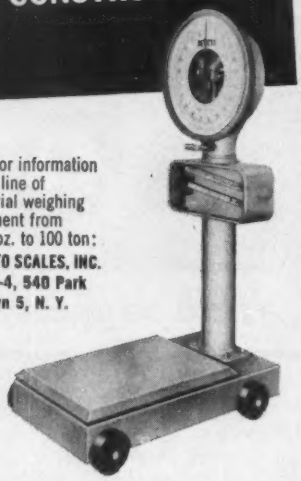
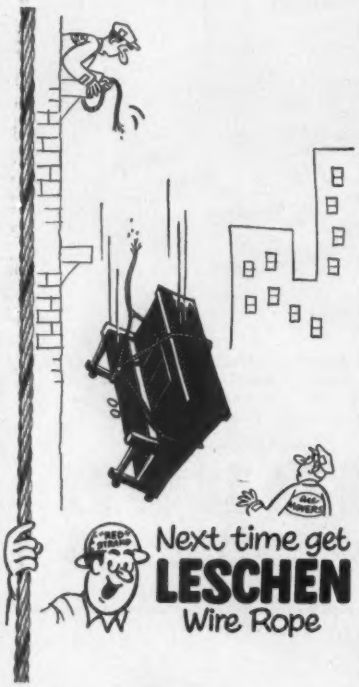
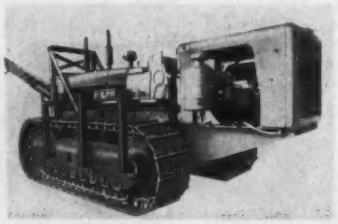


Write for information on full line of industrial weighing equipment from 1/100 oz. to 100 ton:
DETECTO SCALES, INC.
Dept. Y-4, 540 Park
Brooklyn 5, N. Y.



LESCHEN WIRE PORTER ROPE DIVISION
H. K. PORTER COMPANY, INC.

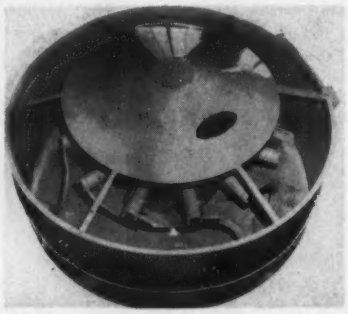
EQUIPMENT NEWS... *continued*



Compressor for Tractor Mounting

Used tractors can be converted into mobile compressed air units by installing a 600-cfm rotary compressor. The Joy Airvane RT-600 can be mounted on different makes and models of tractors and is driven by the tractor pto.

The unit is built as a complete package ready to mount. It can be teamed with a Joy rock drill mounted on the same tractor.— **Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.**



Turbine Type Mixer

New or existing ready mix concrete plants now can be equipped with a T. L. Smith Three-Yard Turbine. The unit can produce as much as 180 yd per hr, according to the manufacturer. The mixer charging height is 54 in. — **The T. L. Smth Co., Milwaukee, Wis.**

Slim Concrete Vibrator

The Ingersoll-Rand 10V vibrator can handle a 30-in.-thick section of 2½-in.-slump concrete. In thinner sections it can vibrate stiffer mixes. The vibrating head is 17½ in. long with a 2½-in. dia. The entire unit with a standard 5-ft hose assembly weighs 25½ lb.

At an air pressure of 90 psi, the 10V delivers 15,000 vpm at no load and 9,000 vpm at full load. — **Ingersoll-Rand Co., 11 Broadway, New York 4, N.Y.**

PRACTICAL PRESTRESSED CONCRETE

Just Published. Gives basic principles, procedures and numerical examples for design of safe, economical prestressed concrete structures. Covers materials, pre-tensioned and post-tensioned methods, specifications, bridge and roof design, and other practical topics. **By H. K. Preston, John A. Roebling's Sons Corp. 360 pp., 136 illus., $11.50**

ENGINEERING MANUAL

Equal to six books in one! For quick answers to engineering problems, including fields outside your own—a practical reference of data and methods in architectural, chemical, civil, electrical, mechanical, and nuclear engineering. Covers most-needed essentials—everything from basic principles to applications. Prepared by a staff of specialists. **Editor, R. H. Perry, Univ. of Oklahoma. 680 pp., 450 illus. and tables, $9.50**

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Just Published. Provides a wealth of usable facts, methods, and data on finance and administration, route selection and layout, soil mechanics, testing, highway materials, basic highway design, rigid pavements, flexible pavements, and other aspects of highway engineering. **Kenneth B. Woods, Editor-in-Chief, Head, School of Civil Engineering, Purdue University. 1696 pp., 672 illus., $25.00 (Payable $7 in 10 days; $6 monthly.)**

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Gives 600 questions and complete answers to help engineers pass state license examinations. Covers mechanical, electrical, civil, and chemical engineering, and includes engineering economics and land surveying. Questions now reflect latest exam trends — suitable for all states. Author has worked on New Jersey exam preparation for 19 years. **By William S. La Londe. 615 pp., 273 illus., $7.50.**

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California's Golden State Freeway construction is speeded as two Lima truck cranes pour concrete on 1¼-mi. section near Los Angeles.

Strong-boom Limas dig, hoist, pour for California contractor

"In our book, Limas are fast, hard-working, well-built machines. We use them for everything—excavating, concrete pouring, and hoisting. We particularly like the strength of the boom. It seems the boom sections are heavier and better constructed than on other make cranes.

"We also feel that Limas are high-production machines—we have tested their performance against a competitive machine and it couldn't begin to measure up to the Lima's output. Because Limas are built better, they stand up longer and are easy to maintain."—*F. A. Seymour, project supt., J. C. Boespflug Construction Co., Los Angeles.*

Lima stands 100% back of both crane and carrier—no division of responsibility between manufacturers. You can be sure that Lima truck cranes are designed and built, from ground up, for power, mobility and easy travel at highway speeds, yet with strength for heavy lifting jobs under the most difficult operating conditions.

There's a Lima type and size for every job requirement—crawler cranes to 140 tons, 80 tons on rubber; shovels to 8 yd.; draglines variable. Choice of power. Prove to yourself just how good Limas are. See them at work. Talk to their owners. For facts and figures, contact your nearby Lima distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, O.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

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Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

BALDWIN BLH LIMA-HAMILTON

California paving contractor says:

Liked A-W roller so well, bought two more!

"Our first A-W performed so well that we bought two more over a period of 5 years. We use them to roll both subgrade and finish courses. They are fast and efficient machines; and can deliver the 95% relative compaction required. Torque converter allows more positive control of rollers for uniform compaction. Hydraulic controls make them easy to operate. Plenty of visibility for operators to do precision jobs. The A-W rollers are well-built; maintenance has been no problem."—*Pat Regan, Exec. Vice Pres., A. J. Raisch Paving Co., San Jose, Calif.*

A-W 3-wheel rollers available in 8 to 11, 10 to 12, 12 to 14-ton models; tandems 5 to 8, 8 to 12, 10 to 14 tons. Portable tandem variable between 3½ to 6 tons. Vibratory Roller Compactor and Widener Attachment also available. Choice of gasoline or diesel power; torque converter with 4-speed transmission optional.

Austin-Western offers you a number of important dollar-saving features not available on many other makes of rollers. Let us prove to you the ways in which A-W rollers can increase your compaction efficiency and decrease maintenance and operating costs. Contact your nearby Austin-Western distributor or write directly to us.

Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

Concrete Placing Rig

The Ridley C3 concrete gun, in combination with a 365-cfm compressor, will place concrete at the rate of 8 to 12 tph. Capacity of the same rig can be boosted to 18 tph with a 600-cfm compressor. The compact rig is equipped with a paddle mixer about 25 to 30 in. high, and a belt elevator that conveys the mix to a hopper at the top of the gun itself. The rig can be either truck or trailer-mounted. — **Ridley & Co., Inc., 2217 Pontius, West Los Angeles, Calif.**

Bottom Dump Trailers

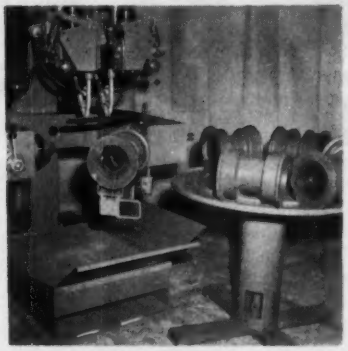
This year's Fruehauf trailers are available as open or closed models with curved sides or as bottom dumpers with vertical sides. The closed, curved-side units can carry 22 cu yd and are loaded through three 20-in. hatches located in the top of the trailer body.

Capacity of open-top models varies from 10 to 30 cu yd. Trailers with vertical sides are heavier than the curved-side models and can carry bigger loads. A variety of dumping gates are available for all trailers. — **Fruehauf Trailer Co., Detroit 32, Mich.**

Color Change Warns Of Antifreeze Trouble

As long as a cooling system is functioning properly, Du Pont's Telar antifreeze remains red in color. But the presence of corrosive exhaust gases or too much air changes the color to yellow as a warning that the system needs

attention. In addition to the patented color check, the antifreeze contains a chemical inhibitor that rustproofs the entire cooling system and protects all metal surfaces against corrosion. This permits the antifreeze to be used year after year without draining, according to the manufacturer.— **Du Pont Co., Wilmington 98, Del.**



Lazy Susan Helps Welders

Rebuilding tractor rollers is easier and faster with the help of a Lazy Susan feeder developed by the Automatic Welding Co. The rollers to be rebuilt are mounted on the rotating table, and a hydraulic ram raises or lowers the table to the proper height for feeding the rollers to the welder. Mechanical devices move the rollers off the table, and a pneumatic air lock positions and clamps them onto the welder. The same mechanical device returns the finished rollers to the Lazy Susan. — **Automatic Welding Co., Box 57, Waukesha, Wis.**

Gage on Control Panel Shows Engine Oil Level

Any combustion engine control panel can be equipped with a Sure oil level gage that tells the operator exactly how much oil is in the crankcase. The gage operates on engines with either 6 or 12-volt electrical systems and is easy to install.

A cork level and a tubular steel casing mounted directly to the side of the crankcase make up the gage. A small hole drilled in the crankcase permits oil to flow into the casing to actuate the cork float. The oil level is registered on a meter calibrated in quarters. It is wired to the ignition and to the cork level. List price is $19.95.— **Sure Gauge & Lock Co., Div. of Waterworth Eng., 2329 Troy St., Dayton, Ohio.**

Austin-Western—the economical, all-purpose grader for contractors

"With our Austin-Western Super 200, we can lay stone or blade a finish grade equally well. Because it does do so many types of work, it's a real time and money saver. For instance, on a recent highway job, the A-W laid such a fine finish on a cloverleaf slope that we didn't have to touch a shovel to it; not a bit of hand labor necessary!

"I wish all equipment was as economical and easy to maintain and operate as the A-W. You can bet that when we're ready for another grader we'll consider buying another Austin-Western!"—*Joe Rotondi, G. Rotondi & Sons Contractors, Melrose, Mass.*

Exclusive all-wheel drive and all-wheel steer, in combination with precision hydraulic controls, make A-W graders such useful, all-around machines for contractors. Learn for yourself; ask any A-W owner.

Available in 6-wheel Super and 4-wheel Pacer models; wide range of weight classes and horsepower ratings. Get all the facts; see a demonstration. Contact your nearest distributor or write us direct.

EXTREME BLADE REACH is one of many operational advantages. Rear steers and blade reaches for perfect finish without tire marks.

Austin-Western

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

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Power graders • Motor sweepers • Road rollers • Hydraulic cranes

LIMA MODEL D ROADPACKER

LIMA SUPER ROADPACKER

Two ways to lower compaction costs with fast, high-density Lima Roadpackers

- ***Compact to 100% density in one pass***—often possible with Lima Roadpackers.
- ***Lay fewer courses***—Roadpackers compact even 10 and 12-in layers in minimum number of passes.

High-production Roadpackers speed construction of highways, parking lots, airfields and earth-fill dams. Vibratory compaction works from bottom to top; fills voids, eliminates shoving. Roadpackers work forward or in reverse. Compact in varying widths and speeds. Travel on-the-job or over-the-road at highway speeds.

Lima Roadpackers are extremely popular with cost-conscious contractors everywhere who are interested in both high performance and low maintenance. Vibrator units are completely sealed, self-lubricated. No external moving parts; no daily maintenance required.

Two Model Roadpackers now available

MODEL D—Six hydraulically controlled vibrator shoes compact up to 600 tons per hour in a 13 ft.,1 in. swath. End shoes fold up for narrow width compaction path or highway travel at speeds up to 30 mph. Compacts from 20 to 95 feet per minute using 4, 5 or 6 shoes.

SUPER—More than doubles compaction performance of any multiple-shoe vibrator machine. Designed for really big jobs. Two rows of six vibrator shoes, hydraulically controlled, compact "tough-spec" materials on production basis from 26 to 268 feet per minute in widths to 15 ft. Highway travel to 24 mph; power brakes and steering, tandem rear drive.

Get compaction cost-cutting facts from your nearby Lima distributor or write to Baldwin-Lima-Hamilton Corporation, Construction Equipment Division, Lima, Ohio.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

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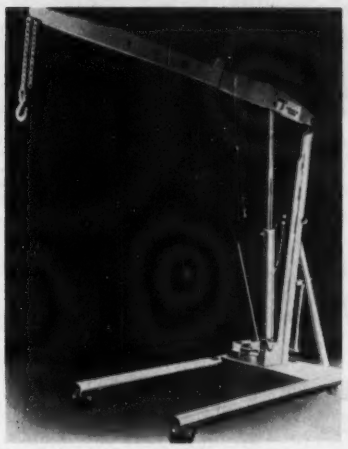
Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

605

Tractor Shovel Works In Tight Quarters

Equipped with a 1-yd bucket, the Michigan 55B tractor shovel has a turning radius of only 11 ft 2 in. The rig is 15 ft 8 in. long overall and weighs 10,200 lb. Its lifting capacity is 5,400 lb, and maximum dumping height is 8 ft.

Top speed in either forward or reverse is 26 mph. A 66.5-hp gasoline engine drives the unit through a torque converter equipped with a power shift.—**Construction Machinery Div., Clark Equipment Co., Pipestone Rd., Benton Harbor, Mich.**



Mobile Hydraulic Cranes

A new line of manually operated hydraulic cranes includes four floor cranes and one truck or pedestal-base model. One of the floor cranes also can be converted to a truck unit. Capacity of all models is 1 ton.

Standard features include a double-acting hydraulic pump, a towing handle mounted at waist height on the crane mast, and a brake to control the speed of mast rotation in truck or pedestal units. Electrical Power-Paks, boom extensions, foot-actuated floor brakes, and counterweights are available as accessories.—**Ruger Equipment Inc., 128 W. Fourth St., Uhrichsville, Ohio.**

NEW MIDGET VIBRATOR
Very Versatile
7/8", 1¼", 1⅝", and 2" heads

Stow Manufacturing Company has just put on the market a rugged, small electric vibrator that is extremely versatile. The model DU vibrator is available with either a 1¼" or ⅞" vibrator head with various length flexible shafts from 2 ft. to 21 ft. long. These small vibrator heads really pack a wallop and are driven by a lightweight ¾ HP Universal motor at 12,000 vibrations per minute.

The STOW DU Midget Vibrator is shown here vibrating 1½ inch slump concrete tongue beams. Because of the small vibrator heads, the DU is ideal for jobs with narrow forms, such as precast work, vaults and manholes and on jobs where the reinforcement is closely spaced. It is also extremely useful for small jobs such as sidewalks, cellar floors, patios and swimming pools.

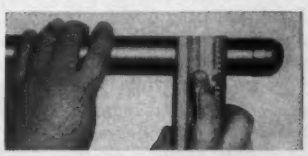
The DU Vibrator may also be obtained with 1⅝" or 2" vibrator heads. ALL STOW vibrator heads have duplex ball bearings at each end supporting the eccentric weight and are sealed to retain the oil lubricant for life. The ¾ HP universal motor weighs only 9 lbs., has a trigger switch in the handle, and features thermal overload protection.

DU

Note: same motor as on DU vibrator.

DUA

1¼" HEAD FOR DU



⅞" HEAD FOR DUA

Ideal for narrow forms

- ¾ HP Universal motor
- Thermal Overload protection
- Operates on 115 volt AC or DC, 25 to 60 cycles
- 1¼" head standard on DU
- ⅞" head standard on DUA

For more information on the STOW DU Midget vibrator, write Stow Manufacturing Company, 31 Shear Street, Binghamton, N.Y.

Stow Manufacturing Company
Dept. J-2, 31 Shear St.,
Binghamton, New York

Please send me Concrete Equipment Cat. 580.

NAME ..... COMPANY .....

ADDRESS .....

CITY ..... STATE .....

Main assignment for four Michigan Dozers on Utterback's 3,000,000 yd, $5,000,000 highway contract: spreading up to 18,000 cu yds of scraper and truck fill per day.

Today: *4 Michigan Dozers for this major Midwest contractor.* Tomorrow: *15*

EACH REPLACES 2

At first glance, this *looks* like a typical big-job spread of equipment. Twenty tractors. Fifteen self-propelled scrapers. Sixty dump trucks. But then you look again. Four of the tractors are on rubber. All Michigans.

"And come back in a few years," says the contractor, Chelsea Utterback, Mt. Pleasant, Michigan, "and *almost all* our tractors on the grade will be rubber-tired Michigans!"

The reasons are pretty obvious. The Michigan units are *fast*—dozing and push-loading at speeds up to 6 mph, running job-to-job at speeds up to 28 mph. *They're economical*—on the basis of Utterback's experience, tires outlast tracks in sand "at least 6 to 1." *They help compaction.* And Michigans come in a *range of sizes* to match the workload. Utterback Construction Company owns 162 and 262 hp units; 375 and 600 hp models are also available.

Speedy 262 hp unit also increases push-loading output

Utterback's 262 hp Model 280 often handles push-loading of 18-yd scrapers. Load time in typical sandy material averages 40 seconds. Load size averages 13 to 15 pay yds. "Overall scraper cycle time is further reduced," says Mr. Utterback, "by the Michigan's ability to quickly boost each pan out of the pit —and by its high-speed return. On cycles of 1000 to 2000 ft, we actually get an *extra load per scraper per hour!*"

Another major production advantage can be noted on the fill. Here, a Model 280 and two Model 180 Michigans spread 14,000 to 18,000 pay yards of sand and clay per day. Their dozing speed averages 7 to 12 mph. Moreover, compaction after the several passes necessary for normal dozing often reaches 98% (Proctor). "*On many jobs, each Michigan Tractor Dozer thus turns loose from fill assignment two crawlers and a roller,*" reports Mr. Utterback.

Job-to-job at 28 mph

On the contract shown—9 miles of four-lane bypass superhighway around Midland, Michigan—the Model 180 Tractor Dozers are being used alternately on two widely-separated fill sec-

Utterback's biggest Michigan Dozer, a 262 hp Model 280, often push-loads scrapers Loading sand to 18 yd spill-point takes high-speed unit average of only 40 seconds.

CRAWLERS, 1 ROLLER

tions. Self-powered truck-like speed saves valuable time. The machines also backfill drainage structures and handle finish-grading.

"By working a 162 hp Model 180 *two hours* overtime on backfilling, we accomplish work *it would take a crawler all day to do*," the contractor states.

Overtime replaces double-shifting

In addition to observing all the standard rules for construction equipment servicing, Chelsea Utterback has a notable one of his own. Each machine is assigned an individual operator, and when double-shift operation ordinarily would be required, that operator stays with his machine for a limited number of overtime hours. Mr. Utterback is convinced by his production records that his system pays off.

He's equally convinced, from the same records, that so far as Dozers are concerned, dependable Michigans pay off "most of all."

Note how high operator rides above ground... out of the dust and with excellent view of blade. Despite its height, Dozer has very low center of gravity.

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK® EQUIPMENT

2403 Pipestone Road
Benton Harbor 40, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

Huge job ($750,000,000)

Michigans do so well handling rock, contractors (Merritt-Chapman-Scott, Gull-DeFelice, Balf-Savin-Winkelman) have eight at work, six more on order

You are looking at one of the biggest construction jobs in the world today: the $750 million Niagara Power Project. The construction firms are Merritt-Chapman & Scott and two joint venturers, Balf-Savin-Winkelman and Gull-DeFelice. Their present work: two four-mile-long conduits from above Niagara Falls to a reservoir and 1,950,000 kw generating plant below the Falls. A tremendous task! Over 16,500,000 cubic yards of excavation, mostly through Lockport dolomite. Cuts 46 ft wide, 64 to 120 ft deep. Total bid price of $136 million. A fantastic variety of work conditions, as evidenced by the wide range of per-yard bid prices: from 30 cents *to more than $45 a yard!* And almost all the specialized rock loading handled by Tractor Shovels. Eight of them when these pictures were taken—*all 17,000 lb lift capacity Model 175A Michigans.*

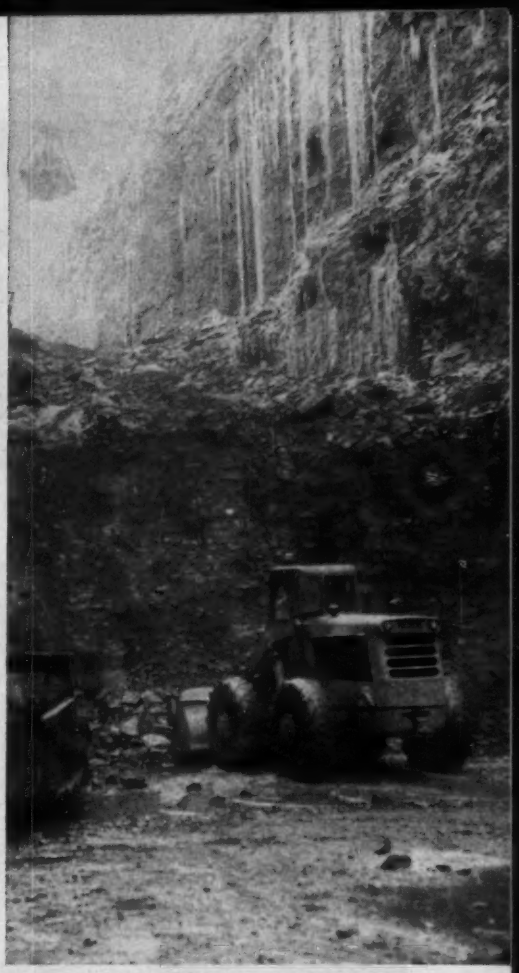
As on most big contracts, the first few Michigans were brought here to do scattered loading. The only difference was that almost all the material was rock . . . yet the Michigans did so well that when emergencies occurred they were *tried in production areas.* Here too, they did the job, moving substantial yardage at low cost! Soon more and more Michigans were brought in, and more jobs assigned to them.

Load rock into skip pans

Today a typical Michigan assignment consists of loading newly-shot dolomite from the deeper cuts into excavator-handled skip pans. One Model 175A, lowered into the cut by the huge dragline it then served, was timed loading the 2700 lb/yd broken material at the rate of 11 yds every 4 minutes . . . including time to back away from the

Typical conduit-area rock assignment for Merritt-Chapman-Scotts' Michigans: moving newly-shot dolomite into spoil pile. Same rig later will load this 2700 lb/yd material into skip pans or haul units.

Typical surface-level Michigan job: truck-loading rock from spoil pile. Because work is so scattered, unit is not equipped with rock tires or rock bucket, yet it usually needs only 4 minutes to heap 18 yd truck.



Here, a Balf-Savin-Winkelman Michigan works at bottom of conduit cut. Machine carries shot rock, dozed over bank by tractor, from toe to skip pan. Production: 11 cubic yards every 4 minutes.

. . . unusual rock-loaders

toe, turn, and travel 50 to 100 ft to the skip pan.

Take over normal hand-labor task: cleaning rock floors

Another common Michigan job is "sweeping" the rock-cut floors—making them, as one contractor says, "as clean as your kitchen table" before concrete is poured. Here, the Model 175A's load out the last foot or two of shot rock. Material is collected into spoil piles for later truck loading, heaped into skip pans, or loaded direct into hauling units. "Michigans sure take the work out of this job," say the operators. "You get a full bucket, 2¼ yds, without trouble—or you can pick up a single stone lying flush against the wall. Ability to *feel* the bucket tilt and lift, plus the quick backup possible through power-shift transmission, keeps machines and buckets from being damaged by hidden rock shelves."

Mobility pays off in supply delivery, pipe-laying

The Michigan Tractor Shovels still handle a wide variety of scattered lifting, dozing, and carrying tasks outside of the conduits. A machine assigned surface work may drive *50 miles or more* in a day. Rubber-tired 27 mph mobility helps substantially here in reducing the waste time normally associated with between-job moves.

Typical of the hauling jobs done by the Model 175A's is handling supplies and equipment arriving on the job by truck. Ten to 30 inch concrete pipe, for example, is chained to the bucket, carried up to 200 feet, and placed in trenches by a Michigan. Later, the same machine returns to backfill, using its bucket both to carry material and as a dozer to blade it.

In 9 months, 3600 work hours

Two of the three contractors are thus using their Michigans two 10-hour shifts a day. Indicative of their operating hours are engine hour-meter readings taken at random. One machine, for instance, delivered nine months before these pictures were taken, registered 3,679 hours. The other, six months on the job, had rolled up 2,409 hours.

Is it any wonder, with performance like this, that all eight Tractor Shovels on this big job are Michigans? Or that six more Tractor Shovels are on order . . . these too, all Michigans?

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Construction Machinery Division

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Canadian Clark, Ltd.
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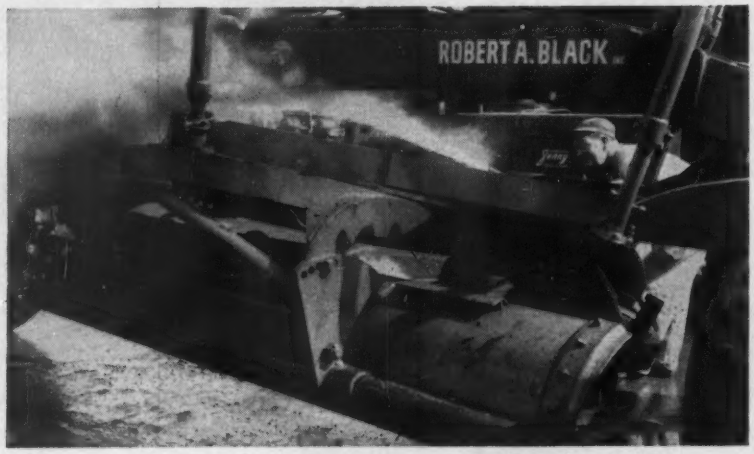
Jenny® uncovers small cracks,



saves big repair bills!

"Because all parts are exposed by the Jenny, we can see what we're doing..." says Shop Foreman, John Boris, Robert A. Black, Inc., Riverdale, Illinois. Cracks in frames of road-graders and tractors, for example, are easily visible after they have been steam cleaned by a Model 3502 Hypressure Jenny. By repairing them at the time of discovery, costly repair bills and job delays are saved later on.

Series "3500" Hypressure Jenny is also used to clean 'dozers, end loaders, road rollers, pickup trucks, pumps and generators. The "3500" Jenny is a job-powered, all purpose cleaner—delivering up to 250 gallons per hour as a steam cleaner and up to 360 gallons per hour as a hydraulic cleaner. A single lever control offers you a choice of eleven different hot or cold cleaning ranges, instantly.

You need not wait to get the better cleaning, and savings in time and money, offered by Series "3500" Jenny. Get them at once on small monthly payments under our new Leasing Plan. Mail the coupon for full details.

HOMESTEAD VALVE MANUFACTURING COMPANY
Hypressure Jenny Division,—Coraopolis, Pa.
(In Canada: Hypressure Jenny Sales and Service Ltd., 517 Jarvis Street, Toronto 5, Ont. C.S.A. Approved)

Please send complete details on your Series "3500" Jenny. 104
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City.....Zone.....State.....

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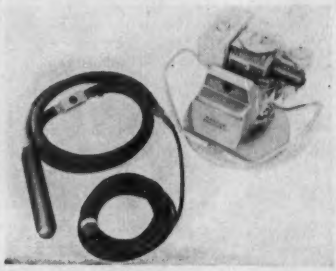


Vibrator Contains Only One Moving Part

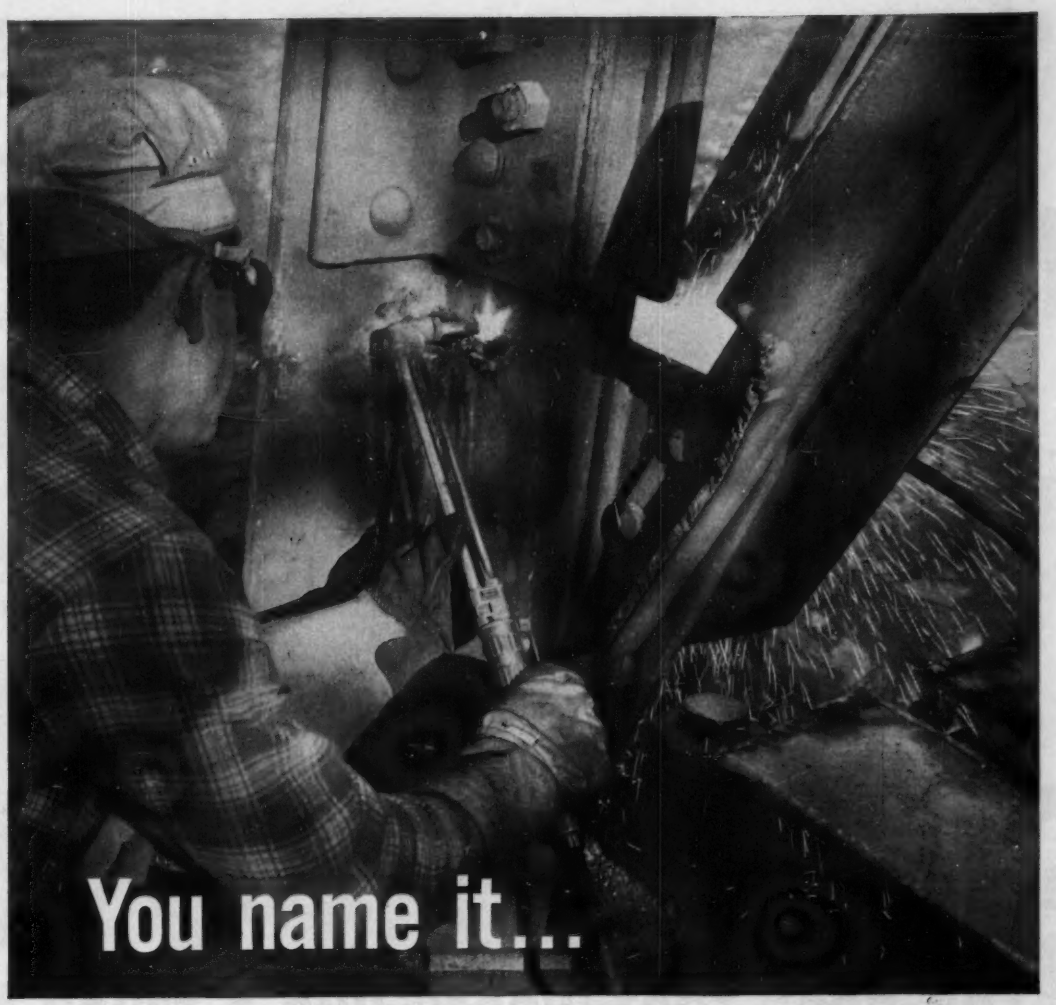
No brushes, commutator, or any other moving components are necessary for this Master vibrator. An eccentric rotor is the only moving part. The motor itself is constructed "inside-out" — the stator is on the inside, and the rotor revolves about it.

Diameter of the vibrator head is 2⅝ in.; standard casing lengths are 7, 14, and 21 ft. A switch that is unaffected by immersion in concrete is located 7 ft from the vibrating head. Heavy duty cable, 25 ft long, connects the casing to the power source. There are no flexible shafts.

Power comes from an 80-lb, 115-v, 180-cycle generator rated at 1,200 w. The generator, too, contains only one moving part. An 11-lb supplementary package can be added to furnish 1,000 w of ac current for lights and small tools.—**Master Vibrator Co., 169 Stanley Ave., Dayton 1, Ohio.**

All-Wheel-Drive Truck Can Carry Big Mixing Drum

This six-wheel-drive Autocar truck is rated at 45,000 lb gross vehicle weight and can carry a 6½-yd concrete mixer. A package of optional components increases the gvw rating to 50,000 lb. The C5566 truck is available with a belt-driven or a gear-driven flywheel power take-off. The engine is a 170-hp gasoline unit coupled to a five-speed transmission and a two-speed transfer case.—**Autocar Div., The White Motor Co., Exton, Pa.**



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Quaker Thermoid

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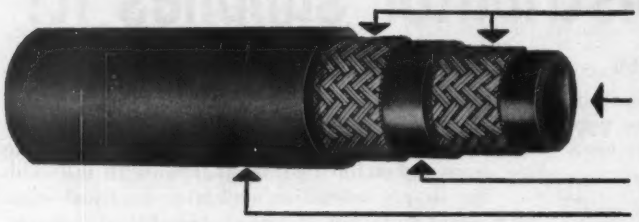
The hose that wears like a truck tire!


Tough braided rayon cord
Oil proof and heat resistant synthetic tube
Positive-bonded rubber friction layer
Red neoprene cover resists oil, abrasion, weather

Work like this is rough on hose, but Thermoid-Quaker "Versicon" takes it in stride. "Versicon" hose is built for high air pressures, up to 300 psi. It's built to withstand dragging over jagged, abrasive rock. It resists oil, baking sun or freezing cold. It's the heavy gauge, tough neoprene cover that takes this kind of surface abuse.

The tough braided rayon reinforcement gives it the extra strength to withstand high working pressures.

The tube is a specially compounded synthetic that's oil proof, heat resistant and will not flake or chip.

"Versicon" is made in all sizes up to 1½" and in lengths up to 500' in some sizes. Also in one, two or three braid constructions for use with water, oil, grease, solvents, sprays and mild chemical solutions.

See your experienced Thermoid Division Distributor for the right hose for your requirements, or write: *Thermoid Division, H. K. Porter Company, Inc., 200 Whitehead Road, Trenton 6, N. J.*

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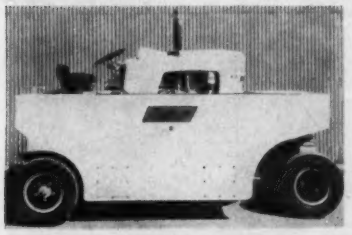
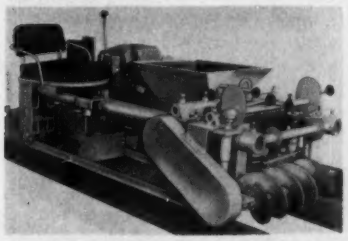
PORTER SERVES INDUSTRY with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.



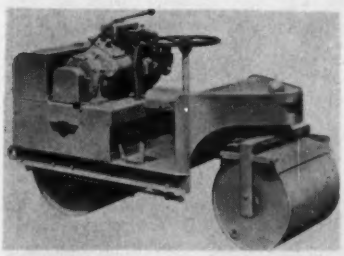
Heavy Pneumatic Roller

Maximum ballasted capacity of the Southwest PR-11 roller is 18 tons. The self-propelled unit has five wheels in front and six in the rear; all wheels are equipped with 7.50x15, 90-psi tires. The PR-11 can be operated both forward and in reverse at the same speed. — **Southwest Welding & Mfg. Div., 3201 W. Mission Rd., Alhambra, Calif.**



Versatile Curb Builder

The Iowa Curbmaster rides on a pair of forms as rails and is handy for pouring curbs and gutters or for widening slabs up to 10 ft. With optional attachments, the one-man-operated machine also can cut and compact subgrade.— **Iowa Construction Equipment Corp., Cedar Falls, Iowa.**



Improved Tandem Roller

Design improvements on the Essick 120 tandem roller include a lower profile, wider rolls, and better visibility. In addition, the engine and transmission are fully exposed for easy servicing. Maximum rolling weight of the 1-ton roller is 2,070 lb.—**Essick Mfg. Co., 1950 Santa Fe Ave., Los Angeles 21, Calif.**

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POSITIVE...AUTOMATIC... INSTANTANEOUS ALIGNMENT

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To make large square openings through a 13-inch reinforced concrete floor, a construction firm decided on a Longyear diamond drill. *All 60 holes were made with one 4-inch Longyear bit, and drilled in 6-10 minutes each.* Another contractor drilled *fifty* 2-inch holes *in cast iron pipe* with Longyear equipment and a single Longyear diamond bit. Actual drilling took only 1-2 minutes to make a clean, even hole in the 6-inch pipe. Call your Longyear dealer for more information on Longyear electric and air powered drills and bits.

Adv-170

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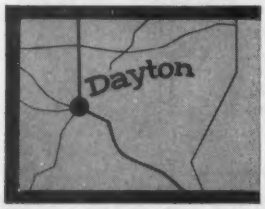
comment on their Ellicott Dredges

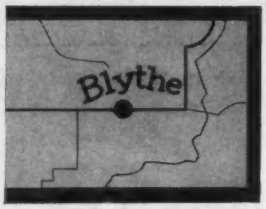


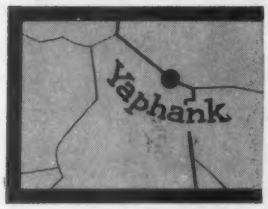
Dayton, Ohio

Mr. W. T. Eiffert, Director, Department of Water writes, "We have never received such a complete piece of equipment, nor have we ever received such complete training in the operation of a new piece of equipment."

Blythe, California

Mr. O. E. Simmons, Manager, Palo Verde Irrigation District says, "All checks indicate that the dredge is exceeding the specified capacity. Our operators frequently comment on the simplicity of operation and the small amount of effort required to handle the control system."





Yaphank, New York

Mr. Albert Cass, Commissioner of Public Works, Suffolk County reports, "The versatility of our Ellicott 12" hydraulic pipeline dredge 'Shinnecock' has made possible a wide variety of local development projects."

Customer statements from all parts of the country and the world testify to the excellent design, quality and performance of Ellicott dredges and the service that accompanies them. These remarks concerning both standardized "DRAGON" models and the heavy duty dredges have come from both public officials and private owners.

If you are considering the purchase of a dredge, we will be glad to tell you more about what other owners of Ellicott dredges say, and provide technical details. Write to Ellicott Machine Corporation, 1605 Bush Street, Baltimore 30, Maryland. 2455

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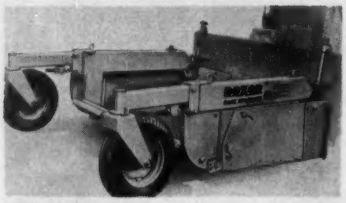
Successors to the floating dredge business of the Bucyrus-Erie Company and the American Steel Dredge Co. Complete engineering, design and construction service.



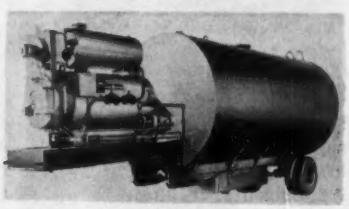
Base Spreader Adjusts to Any Width

Screw jacks adjust the cross members of this spreader to fit any working width from 8 to 18 ft. Optional wing gate extensions can be added for additional width. The Ulrich Dozor spreader mounts on any Caterpillar dozer blade, and the blade serves as a strike-off. Large, threaded clamps attach the entire unit to the blade.

Caster wheels at the front of the Model 18 Dozor are adjustable up or down and to either side. Also, one wheel can be adjusted independently of the other for work next to an existing slab. With sufficient trucks, maximum capacity of the Model 18 is about 600 yd per hr.—**Ulrich Mfg. Co., Roanoke, Ill.**

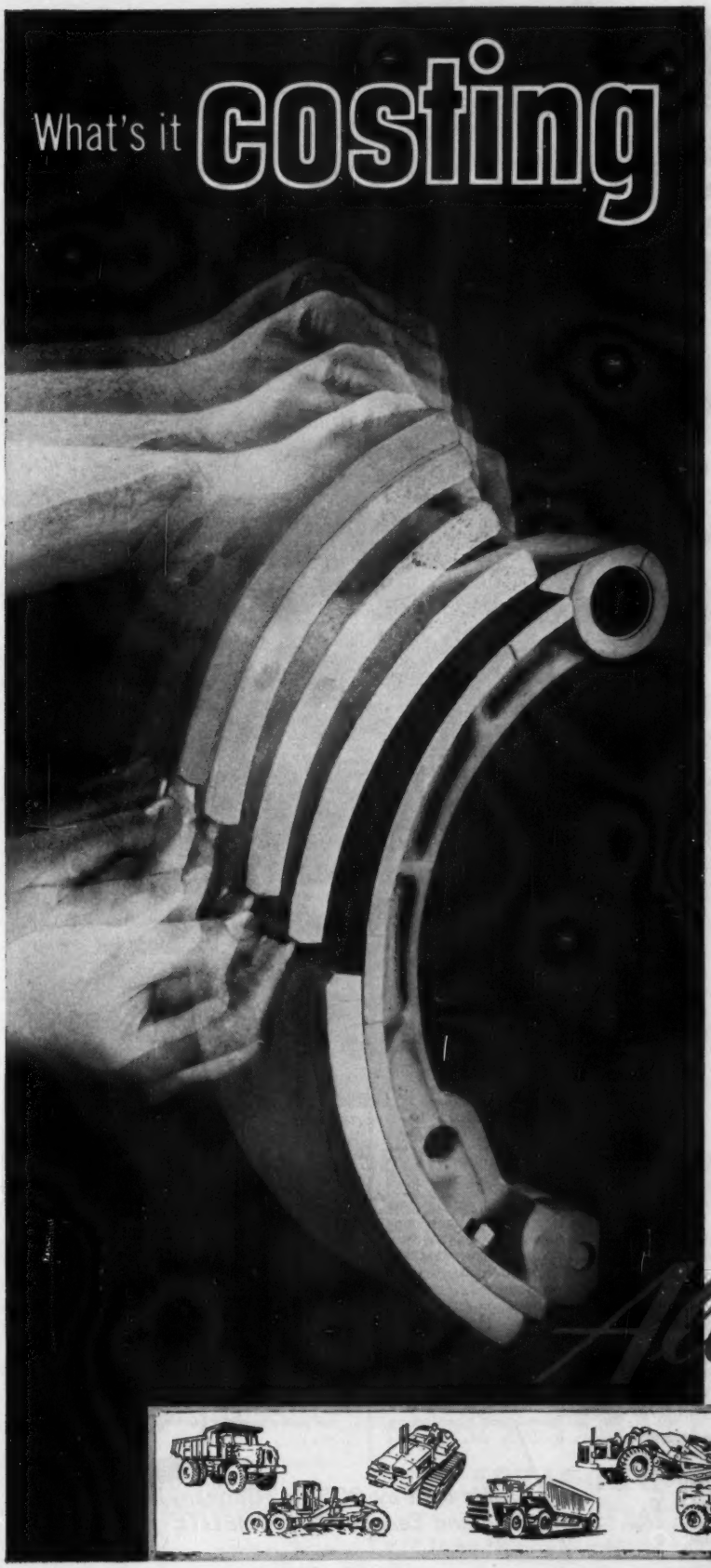
Pulling Tool Removes Conveyor Roll Bearings

Removing bearings from conveyor rolls is a simple task with a specially designed Universal Engineering pulling tool. To remove a bearing, the roller stub shaft is first removed, and the expandable puller bolt is inserted in its place. The expanding bolt is then turned until it is holding tight and the pulling lips are seated firmly behind the inner ring of the bearing bore. Then, a few twists on the puller nut extract the bearing from its seat in the roller, and a new bearing can be inserted. — **Universal Engineering Corp., 625 "C" Ave., N.W., Cedar Rapids, Iowa.**



Portable Plant Heats And Stores Hot Asphalt

A direct-fired oil heater with forced circulation boosts asphalt temperatures to 450 deg in this



you

to reline brakes?

Want to save the $1,000 *or more* brake jobs can cost you in a year? TORQMATIC DRIVE owners will tell you it's automatic with the built-in retarder, which also provides the added safety of another braking system.

For this optional TORQMATIC DRIVE feature saves service brakes for everything but full stops. Naturally linings last far longer... downgrade runs are safer.

TORQMATIC owners also report saving up to $2,000 every time they train a new driver... eliminating one engine overhaul out of three... wiping out engine-disconnect clutch costs.

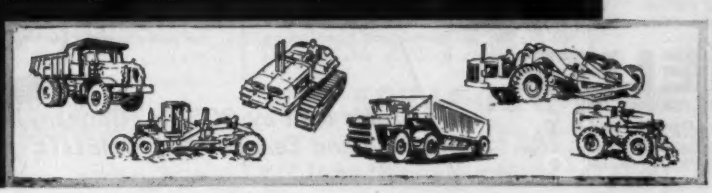
Pays for itself in savings alone

Sure you'll pay more for TORQMATIC — but you quickly get your money back in repair savings. And TORQMATIC also speeds job cycles—there's no need to slow down for shifts.

More and more operators are ridding themselves of their clashbox-caused expenses by switching to TORQMATIC. It's been proved on years of tough jobs. Details? See your dealer or write Allison.

ALLISON DIVISION OF GENERAL MOTORS
Indianapolis 6, Indiana
In Canada: GENERAL MOTORS DIESEL LTD.,
London, Ontario

Allison TORQMATIC



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High-Cycle Electric Paving Breaker Set

COMPARE THESE COSTS. This high-cycle electric paving breaker will do everything that a 45 lb. air hammer will do but look at the costs. A 45 lb. air hammer, hose and small air compressor cost at least $3,000. This paving breaker set . . . The BOSCH (Germany) Paving Breaker and the HOMELITE Generator to run it . . . cost about $1,300 combined. These are savings you'd like to pocket. But that is far from all.

COMPARE THESE RESULTS. Gets to the job faster. Compact and lightweight, the complete set can be rushed in a station wagon, small truck or car trunk. Makes less noise and pays an important, extra dividend. The HOMELITE Generator provides enough high-cycle power for two paving breakers; and in addition, 110 volts DC current for floodlights and AC-DC electric tools. Simple design and rugged construction assures minimum maintenance. And service, when necessary, is available in the sixty-five HOMELITE Factory Branches located throughout the country. Write for Bulletin L-827A, right now.

BOSCH HIGH CYCLE ELECTRIC PAVING BREAKER
Dimensions: 28" x 21" x 5"
Weight: 60 lbs.
Blows per Minute: 1250
Current Consumption: 1500 watts
Motor: 180 cycle, 230 volt, 3-phase AC (high-cycle)

HOMELITE CARRYABLE GENERATOR
Rating: 3000 watts, 230 volt, 180 cycle, 3-phase AC. 2500 watts, 110 volt DC.
Dimensions: 30" x 20" x 20"
Weight: 143 lbs.
Fuel Consumption: 1½ hours per gallon at full load.

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Manufacturers of Carryable Pumps, Generators, Blowers and Chain Saws
In Canada, Terry Machinery Co., Ltd.

Tools built by BOSCH (Germany)
Sold and Serviced by HOMELITE

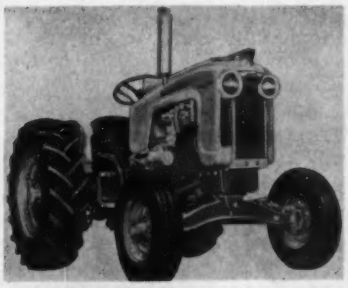
Cleaver-Brooks hot asphalt plant. The heater also circulates heat transfer oils at 8 fps through a closed system in the tank. Built-in electric, electronic, and pressure safety devices shut down the heater in case of a malfunction.

Available storage tank capacities are 10,000, 15,000, and 20,000 gal. The entire unit is mounted on an integrally built frame and rides on pneumatic tires.—**Cleaver-Brooks Special Products, 225 N. Grand Ave., Waukesha, Wis.**

Rear Dump Wagon

Carry capacity of the Allis-Chalmers TR-160 rear-dump motor wagon is 12 tons. Struck capacity is 7.7 yd, while heaped capacity is 12 yd. The wagon body is 11 ft long and 7 ft 10 in. wide. Average loading height is 7 ft.

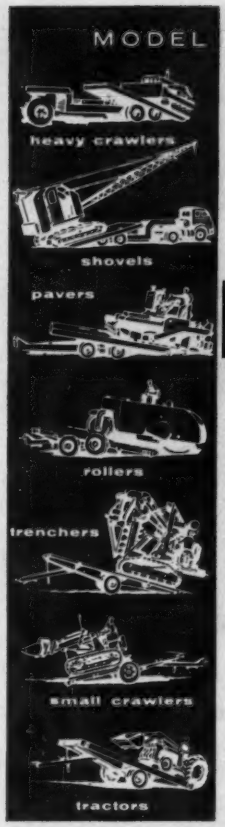
Horsepower rating of the unit's supercharged A-C diesel engine is 155 at 2,200 rpm. A constant-mesh, five-speed transmission is standard and gives the unit a maximum speed of 25.4 mph. Shipping weight of the TR-160 is 28,100 lb. The wagon is interchangeable with the A-C 7-yd S-160 scraper. — **Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.**



General Purpose Wheel Tractors

Two Minneapolis-Moline wheel tractors can handle a variety of construction jobs or travel on the highway when needed. Attachments for the tractors include dozer blades, crane hooks, backhoes, loaders, and several types of buckets for trenching or digging belled holes.

Moline engines power both



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Model "BT"-10 ton TANDEM
shown loading a roller

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Before you buy any tilt trailer, compare, model for model, with MILLER Tilt-Top features, — Precisely balanced platforms; extra deep side channels, for extra platform support right out to the edges; easy-to-hitch tongues; precision roller or ball bearings on axle and walking beam shafts; first line, tube type trailer tires and a choice of air, electric or vacuum brakes on most models. Best of all, you pay no premium for MILLER quality . . . model for model, you'll find they undersell most tilt trailers!

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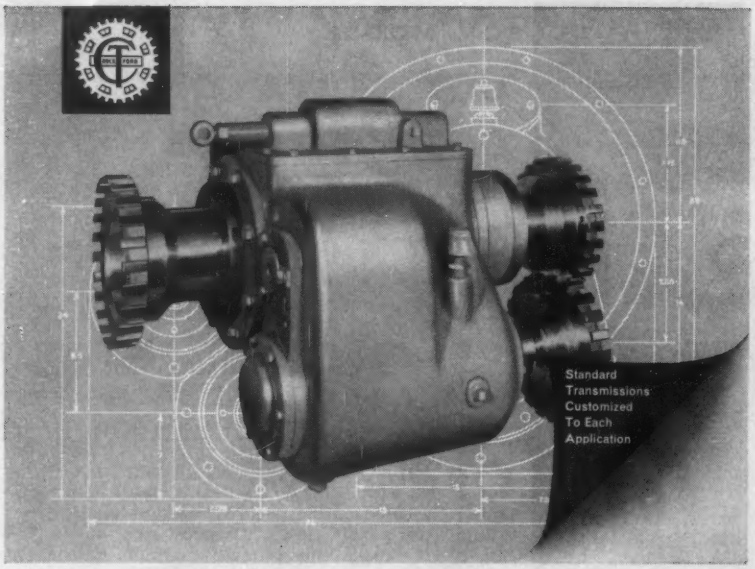

Cotta split-shaft power take-off transmission

Use full engine power for truck travel or auxiliary equipment with Cotta split-shaft power take-off

Need truck mobility to transport auxiliary equipment quickly . . . *plus* full engine power for pumps, winches, electric sets, and compressors after they arrive on the job?

Cotta's split-shaft power take-off transmissions lead full engine horsepower to rear axles, *or* to auxiliary equipment when heavy loads demand it. Auxiliary engines can be eliminated. Reduced gear loads and constant mesh gears on both shafts prolong equipment life.

PTO flexibility — Standard truck transmission ratios combine with Cotta's split-shaft ratios to provide exceptional drive flexibility for road travel or PTO performance. Customized gear-ratio variations are available for individual jobs.

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See our catalog in *Sweet's Product Design File.* Check the descriptions of standard and custom applications. Then call Cotta (TWX-RK 7720 or phone WO 4-5671) for complete details on versatile transmission designs.

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Pumping Locomotives Construction Drilling

COTTA TRANSMISSION CO., ROCKFORD, ILL.

models. The Big Mo 500 has a 206-cu in. engine delivering 56 bhp on gasoline or 50 bhp on diesel fuel. A 60-bhp gasoline engine powers the Big Mo 600.

Five speed ranges in both forward and reverse give each unit a top speed of 14.57 mph in forward or 18.22 mph in reverse. The Big Mo 600 is equipped with a hydraulic reverse shuttle gear, while the 500 has a mechanical reverse shuttle. Hydraulic power steering is standard on both tractors. — **Minneapolis-Moline Co., Hopkins, Minn.**

One-Cylinder Engine Powers Electric Plant

The single-cylinder, air-cooled, four-cycle engine powering this Kohler electric plant is designed for gasoline or combination gas-gasoline operation.

Rated capacity of the electric plant is 2 kw, but it can handle intermittent overloads up to 2.5 kw. The single-phase generator supplies 60-cycle ac current at 115 or 115-230 v.—**Kohler Co., Kohler, Wis.**

Tractor Accessories For the Tropics

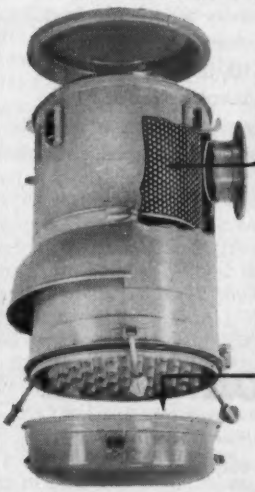
Outboard-mounted fans can be installed on International TD-20 and TD-15 crawler tractors for better engine cooling under high operating temperatures. The outboard mounting also reduces the amount of abrasive material passing over the radiator core. The fan is standard equipment on International Drott Skid-Shovels.

Also available for the TD-20 and the TD-20 Skid-Shovel is a tropical radiator core that consists of four rows of tubes instead of the standard three.—**International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**

Don't try this with an ordinary paper filter!

Most paper filters can't stand moisture or humidity... but you can wash the Duralife filter and save money!

Donaclones clean air 10 to 20 times better than oil bath types!



Only 2% of dust reaches Duralife paper filter!

Embossing and pleating provide maximum filtration area. Controlled porosity gives 99.9% dust removal.

98% of dust removed here!

Cluster of Donaclone tubes make up highly-efficient primary centrifugal cleaning stage. Dust is ejected into dust cup for easy servicing.

Washability proves 2 points

1. Moisture does not impair the performance of the Donaclone. Rain, fog, high humidity are no problem. Chemically-treated, special-formula paper is not affected.

2. Donaclones cost less to service. Filter seldom needs any attention because 98% of the dust is removed by the primary centrifugal cleaners. When it does need cleaning, you just dunk it in water and detergent . . . and it's like new. Replacements are mighty infrequent.

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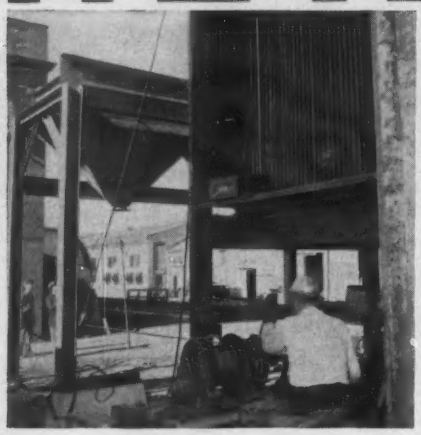

REPLACES BULKY, EXPENSIVE CRANES!

I-R's new, rugged, but compact K6U Hoist easily handles heavier loadings which ordinarily tie up cumbersome cranes and other expensive equipment. It can handle bigger loads than any other single drum air hoist on the market. Yet you get the same adaptability and light handling characteristics that made its smaller predecessors real time and money savers on materials handling jobs in all industries.

New I-R Size K6U
Single Drum
Utility Air Motor Hoist

Rated capacity is 7000 lbs. with maximum speed of 65 ft. per minute. (Companion hoist K6UA available with rated capacity 5000 lbs. and maximum speed of 95 ft. per minute.)

Hoist has reversible 6-cylinder Air Motor with safety-type throttle which shuts off automatically when released. Reversible motor permits full control of suspended loads with throttle only. (Remote control equipment optional.) Can be mounted in any position for a wide variety of lifting and pulling jobs.

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New Publications

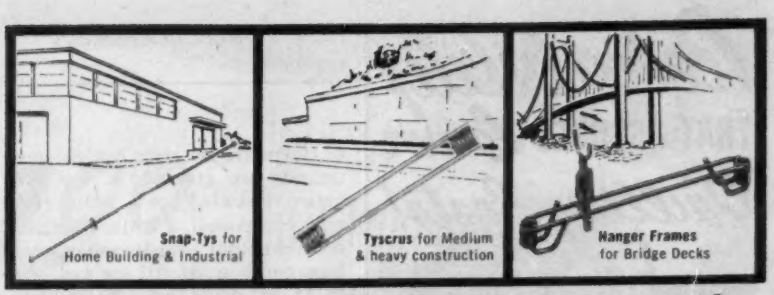
These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

CONCRETE BUGGY — Two descriptive sheets are available from Prime Mover. One (Form PM-15C-6) illustrates and gives specifications for the 10-cu-ft 1,500-lb capacity Model M-15B powered buggy. The other (PM-15C-7) provides a productivity chart for the buggy that tells how many cubic yards of concrete per hr one laborer can place when the distance between the mixer or hopper and the center of the pour area varies from 50 to 400 ft. The sheet also includes information on runways and runway bucks, or chairs, and a job-layout plan.—**The Prime-Mover Co., Muscatine, Iowa.**

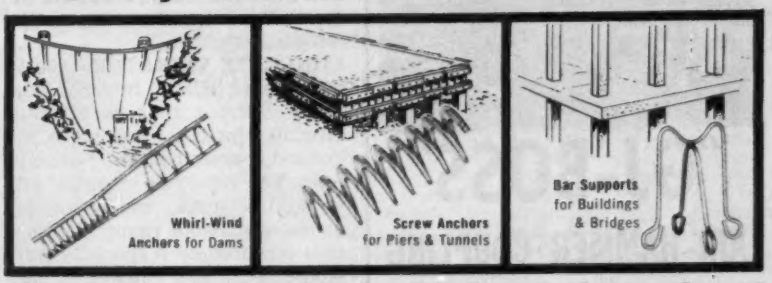
CRAWLER CRANE — A 20-p booklet details the ¾-yd crawler-mounted Lorain Model 26 with job applications for use as a shovel, crane, clamshell, dragline, hoe, log loader, pile driver, and magnet. The booklet illustrates the heavy-duty turntable, the power plant, the clutch shaft, and the hoist shaft. The machine is available with three different-sized crawler mountings and two-lever power controls.—**The Thew Shovel Co., Lorain, Ohio.**

WIRE MESH PLACEMENT—The American Road Builders Assn. has published a technical booklet entitled Machine Placement of Wire Mesh Reinforcement in Single-Lift Concrete Pavement. The author, Glenn S. Paxson, assistant engineer for the Oregon State Highway Dept., describes the methods and machines developed by Contractor Roy L. Houck of Salem, Ore., to sink dowels and welded wire fabric in fresh concrete dumped to full slab depth in one pass of a paver (CM&E, Feb., 1960, p 84). Technical Bulletin 246 may be ordered for 50¢ a copy. —**American Road Builders Assn., World Center Bldg., Washington 6, D.C.**

CURING COMPOUNDS — Descriptions, applications, and specifications of four different types



For every kind of concrete construction



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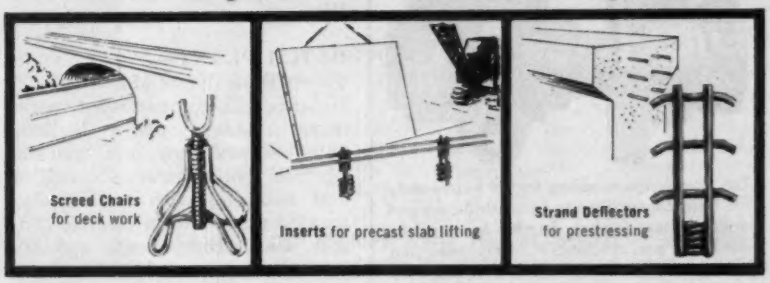

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All Richmond-engineered products, and there are more than 400 in the complete line, are designed to provide the extra strength that assures a safe, dependable forming job while saving time and money.

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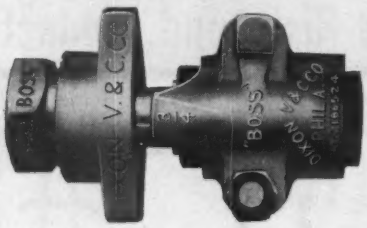

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NEW PUBLICATIONS . . .
continued

of Horncure concrete curing compounds are given in a 4-p brochure. Detailed are a 100% resin base compound, a white pigmented compound, and two wax-resin base compounds. All are available in 55-gal drums or 5-gal pails.—**A. C. Horn Companies, Div. of Sun Chemical Corp., 2133 85th St., North Bergen, N.J.**

CONCRETE VIBRATOR—Wacker's Model HIV-1 internal concrete vibrator that operates on only 50 v for safe handling on wet ground is described in a new bulletin. The 180-cycle vibrator with a squirrel-cage motor-in-head operates at 10,000 rpm under load. It is powered by a specially built Kohler generator capable of handling 2 and 2¼-in. vibrating heads.—**Wacker Corp., Hartford, Wis.**

BATCH PLANT—A 4-p booklet covers Blaw-Knox Model 200-222 Uni-Rect six-compartment truck-mixer loading plant. Bulletin 265-7 shows how one operator controls both material handling and batching with a centrally-located push-button electric console. Basic components and optional features are listed.—**Blaw-Knox Co., Construction Equipment Div., Mattoon, Ill.**

TRACTOR SHOVELS — Eight tractor shovel models are described in two different booklets issued by Michigan. Bulletin TS-2500 covers the two largest capacity tractor shovels, Models 275A and 375A. The 262-hp Model 275A is equipped with a 4½-yd bucket, and the 335-hp Model 375-A has a 6-yd bucket. Major subjects treated are the power train, hydraulic system, engineering features, and simplified maintenance. Bulletin 3000 covers Models 55A, 55B, 75A, 85A, 125A, and 175A. Bucket capacities on these models range from 2 to 6½ cu yd. —**Construction Machinery Div., Clark Equipment Co., Pipestone Plant, Benton Harbor, Mich.**

FORK-LIFT TRUCKS—Two 2-p catalogs cover Allis-Chalmers fork-lift line. Bulletin 638 features diesel lift trucks of 3,000 to 8,000-lb capacities, and illustrates safety features to reduce the hazards from hot exhaust gases and

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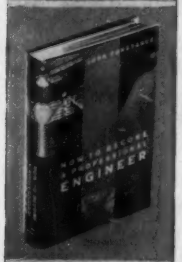

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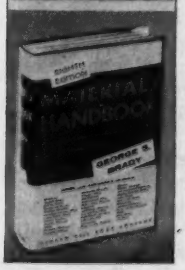

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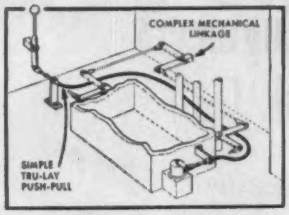

Push-Pull remote controls, shown here, are flexible, have but one moving part, and give a lifetime of accuracy. Mechanical linkages are complex, are made of many parts, wear at many points, and produce increased backlash, lost accuracy, and vibration rattles.

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sparks. Bulletin 481A covers gasoline, LP gas, and diesel lift trucks of 2,000 to 10,000-lb capacities.—**Engine-Material Handling Div., Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.**

WIRE ROPE—Tuffy Tips, a handbook on the abuses and correct uses of wire rope and slings has just been published. The 27-p book explains how to prolong the life of wire rope, how to figure reeving loads, and how to set up reels for unwinding. It also presents tables of the breaking strength of wire rope according to diameter and type of construction.—**Union Wire Rope Corp., 2270 Manchester Ave., Kansas City 26, Mo.**

ALUMINUM DUMP BODIES — Bigger Legal Payloads is the title of a 6-p folder that describes Daybrook's full range of aluminum dump bodies and matched underbody telescopic hydraulic hoists for single and tandem axle trucks, trailers, and dump trains. The folder (HB-6001) illustrates dump body construction. The bodies illustrated have struck capacities ranging from 8 to 18 cu yd. — **Daybrook Hydraulic Div., Young Spring & Wire Corp., Bowling Green, Ohio.**

HELIWELD CATALOG — Airco has published a revised edition of its complete line of manual, semiautomatic, and automatic Heliwelding equipment. The 24-p booklet (form ADC 709C) contains information on accessory equipment, tungsten electrodes, and filler wires used with this welding process.—**Air Reduction Sales Co., 150 E. 42 St., New York 17, N.Y.**

ROAD WIDENER ATTACHMENTS—A descriptive sheet that gives dimensions and rental rates of road-widener attachments is available from Barber-Greene distributors. Included in the rental program are strike-off attachments and extensions, tamping and leveling equipment for laying asphalt 2 to 6 ft wide, bevel end plates for five different mats, and a concrete slipform-vibrator attachment.—**Barber-Greene Co., Aurora, Ill.**

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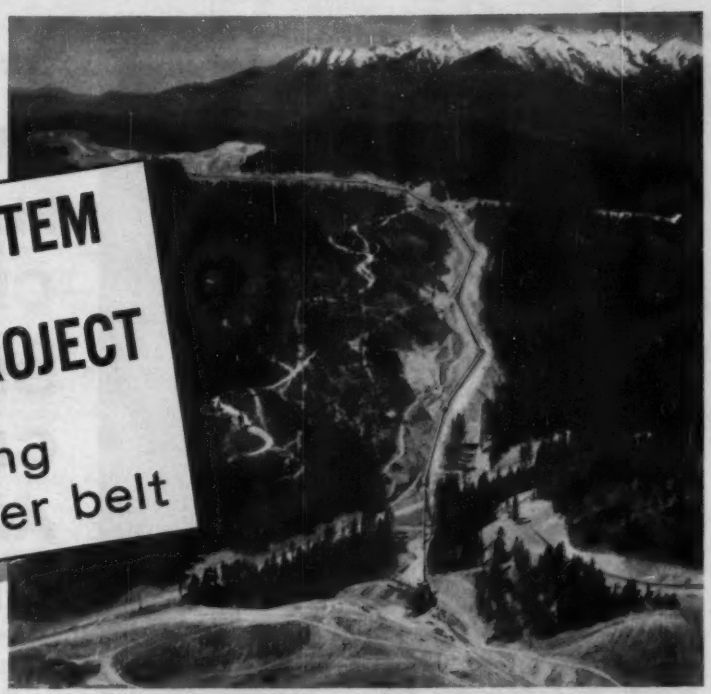

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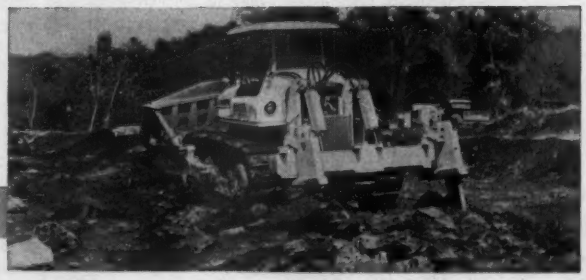

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Methods Memo . . .

Prize-Winning Construction Film

Construction of a Manhattan office building is the subject of a 20-minute movie that won the Venice Film Festival in the short subject category. The film also was nominated for an Academy Award and has won several prizes in international film competitions.

The title of the movie is "Skyscraper," and it presents an account of the construction of the 39-story Tishman Building at 666 Fifth Ave. Photographic scenes cover all phases of construction from site clearing and excavation to interior finishing. The film is complete with a musical score composed by Teo Macero and sung by Gene Mumford. It will be shown to movie audiences throughout the world.

Maintenance Men Join Forces

There's strength in numbers when it comes to equipment maintenance. At least a group of New England contractors thinks so. Their equipment people have banded together and hold meetings on the last Friday of each month in Worcester, Mass. The group is known as the Construction Equipment Maintenance Assn. and at present includes members from four New England states.

Salesmen and construction superintendents are not eligible for membership. The group is strictly for equipment people: equipment superintendents, master mechanics, equipment house service managers, and mechanics from construction firms, cities, and towns. The members kick around ideas picked up from each other, and discuss common problems, and hear talks on maintenance by factory representaatives.

Chairman of the CEMA is Julius Papitto of Campanella & Cardi Const. Co. of Warwick, R. I. Anyone interested in the organization should contact Mel Wyner of the Gil Wyner Const. Co., 12 Newland St., Malden, Mass.

Material Support

To become a patron of the arts one may donate $5 or more to help cover the construction costs of the Lincoln Center for the Performing Arts in New York City. In its campaign to raise $102 million, the Center has turned to the public for donations covering various construction items.

For example, for $5 one can give 118 bricks, or 4,000 nails, or 3½ bags of cement. Velvet ropes can be donated for $10 and auditorium seats for $1,000. But the Center makes it clear that seat donors will get no special seating privileges.

All gifts are tax-deductible and may be spread over five years. Donors' names will be enshrined permanently in the Center. A book will contain the names of those who donated from $5 to $100; gifts from $100 to $1,000 will qualify one's name for a listing on a wall plaque; givers of larger amounts will rate individual wall plaques.

Hidden Profits

It was just another land clearing job for Steve Fox of Hicksville, Long Island, until his Caterpillar D6 bulldozer really hit pay dirt about 18 in. below the ground surface. It was a metal ammunition box containing more than $70,000 in bills. The money was wrapped in plastic and brown paper and had not suffered from moisture in the ground. It took eight detectives two hours to count the loot.

Steve, a CM&E reader since '52, was leveling some brush for a Long Island building site on the morning of June 3 when his dozer hit the drab-colored box. After discovering that it contained money, he called Arthur Skodnek, owner of the property, and told him of the find. Then the money was taken to the police where it was counted. It will remain in the hands of the police and will be turned over to Mr. Fox if it is not claimed in three years.

Hard-Sitting Baseball Fans

Drilling holes in the concrete stands is a year-round job in Fenway Park, home of the Boston Red Sox. Exuberant baseball fans are creating a continuous maintenance problem by jarring the seats loose from their anchors.

Preparing for the current season required the drilling of 11,000 ½-in.-dia holes to replace the fasteners for 5,000 of the Park's seats. One man with a Skil Roto-Hammer drill takes care of replacing the fasteners throughout the season.

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NEW . . . BROCKWAY ALL STEEL "CAB-NAPPER"

Full size bunk — exceeding ICC requirements • Six inches shorter (B.B.C.) than conventional tractors • Famous Brockway Safety-View cab.

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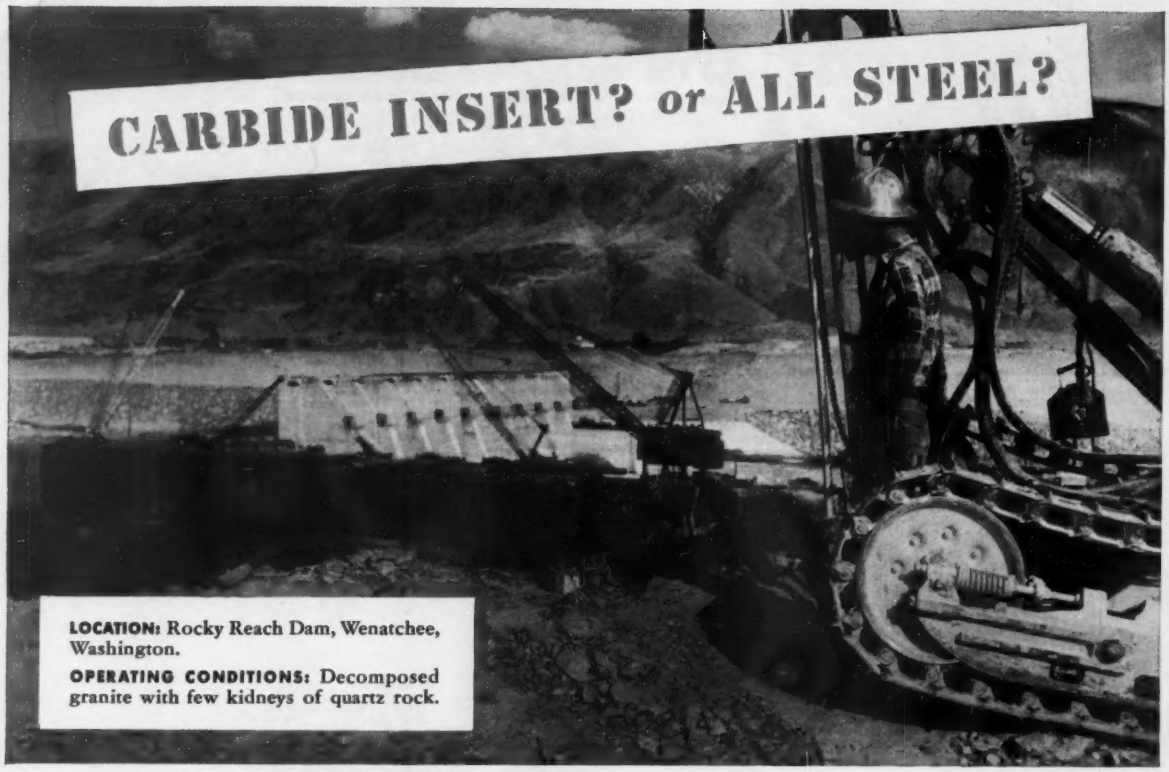

CARBIDE INSERT? or ALL STEEL?
LOCATION: Rocky Reach Dam, Wenatchee, Washington.
OPERATING CONDITIONS: Decomposed granite with few kidneys of quartz rock.

"We drill 1400 to 2000 feet of blast hole per bit with TIMKEN® carbide insert bits"

...Reports Goodfellow Brothers, Inc.

DRILLING to relocate the Great Northern Railroad and Highway near Wenatchee, Washington, Goodfellow Brothers, Inc. selected Timken® carbide insert bits to drill blast holes in the decomposed granite and kidneys of quartz rock. Regrinding both gauge and flutes, they got 1400 to 2000 feet of blast hole from every bit.

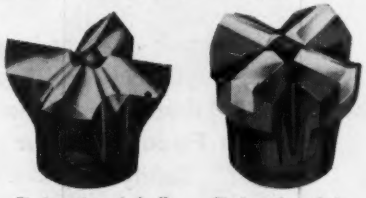
That's the kind of performance you get with Timken carbide insert bits when conditions call for them. Their five front holes and deeper wing clearance help clear chips faster. You drill rock instead of chips.

But carbide insert bits may not always be your best bet. In ordinary ground, you'll save more with Timken all-steel bits. With correct and controlled reconditioning, they give you lowest bit cost per foot of hole when you can drill out full increments of steel.

But whatever your drilling conditions and whatever type of bit you use, your drillers will save time and you'll save money with Timken bits. They're all interchangeable in the same thread series. Your drillers can change bits as fast as the ground changes—without changing drill steels.

All Timken bits are made of Timken electric furnace fine alloy steel. We're the only American maker of removable rock bits who takes that extra step. And you get extra protection from a special shoulder union that protects threads from drilling impacts.

Get the right and most economical bit for your drilling jobs. Call or write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO".



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